1905

NEW SOUTH WALES

DEPARTMENT OF PUBLIC INSTRUCTION

COURSE OF INSTRUCTION
FOR
PRIMARY SCHOOLS

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SYLLABUS OF INSTRUCTION.

PREFACE.

THE school aims at giving to its pupils the moral and physical training and the mental equipment by which they may qualify themselves to meet the demands of adult life with respect to themselves, the family, society, and the State. By its influence upon character it should cultivate habits of thought and action that will contribute both to successful work and to upright conduct, and, by the kind of instruction it imparts, it should prepare the pupils for taking up the practical duties of life and give them tastes and interests that will lead to activities beneficial both to themselves and to the community.

The school having thus a practical purpose to serve, the detailed subject-matter of school lessons should be so selected as to contribute most effectively within the limited period of school life to the training and equipment required. With regard to the material of instruction, the character of the teacher's lessons is determined, not by the quantity of the subject-matter that enters into his teaching, but by the fitness of the subject-matter for the powers and needs of the pupil, and the selection of it is regulated, not by what it is possible for the child to learn, but by what he most needs to know.

The Syllabus, besides providing a progressive course of instruction, is designed to give practical application in the teaching work of schools to the principle of the correlation of the subjects of study, to make "the self-activity of the pupil the basis of school instruction," to bring the work of the pupil into close touch with his home and social surroundings, and to make the school a powerful agent in the intellectual, moral, and social development of the child.

The school curriculum is not a collection of detached and independent subjects, but is made up of various related parts, dependent upon and contributory to one another. This correlation is provided for in the Syllabus, by grouping various related subjects as follows:—*English*—Correct speech, reading, writing, spelling, composition, recitation, grammar. *Mathematics*—Arithmetic, mensuration, algebra, geometry. *Nature*

Knowledge—Geography, object-lessons, elementary science. *Civics and Morals*—History, Scripture, moral duties, citizenship. *Art and Manual Work.*—Drawing, brushwork, certain kindergarten exercises, modelling, woodwork, needlework. *Music and Physical Education.*

Not only are the subjects of one group related to one another, but those of one group are related to those of another. History and geography should contribute to one another; geography and mathematics, drawing and nature study, manual work and elementary science, should be made mutually helpful.

English is the basis of the curriculum. The teaching of English aims not merely at enabling the pupil to acquire the mechanical arts of reading and writing but mainly at giving a command of the *use* of the mother-tongue as a means by which he gains access to the printed and written thoughts of others, and by which his own thoughts are expressed orally and in writing. It, therefore, covers what has been embraced by the terms reading, writing, spelling, and composition, and this Syllabus requires that such a scope should be given to the treatment of these sections as to secure the aim above-mentioned. English, however, enters into the whole course of instruction. The proper treatment of every subject should demand from the pupils the clear expression of their thoughts, their knowledge being made definite and practically available by the statement of it in appropriate language.

In this connection, it is provided that, in addition to the prescribed reading-books, the pupils should read approved books supplementary to the ordinary course. These will enable the pupils to widen their range of interests, and, as the books chosen should be such as deal with subjects suitable to the ages of the children, progress in the mechanical part of reading will be more rapid, and from the first the pupil will learn to look to books as a source of pleasure, thus laying the foundation of an appreciation of literature.

The Syllabus in mathematics deals with quantities, expressed by numbers, literal symbols, lines, and geometrical forms. From the earliest stages, the child is led to deal with quantities of actual things, and with the measurement of quantities, using various units—sticks, bundles, tens, dozens, feet, pence, ounces, &c. It is important that the youngest children should not only see but handle the quantities with which they deal, and actually make the measurements on which they are to operate. A valuable educational opportunity is lost if the pupil merely sees the teacher do what he should do for himself. It is here that a means is offered for directing and turning to useful purpose the self-activity of the child. Since, throughout the whole course, the exercises should be such as may naturally arise out of the pupil's experiences, it will be noted that the Syllabus requires the pupil to deal only with numbers that he can comprehend. It also requires that all mechanical processes of calculation should be treated as mere means to serve a real purpose, and further, that, as the methods employed in mental calculation are natural methods, mental work should be the basis of the instruction in this subject, written calculations being used merely as a supplementary aid or to give exercise in the expression of processes It should be regarded as a matter of great importance that all mathematical work should be as accurate as the nature of the operations demands. Accuracy in dealing with numbers, in measurements, in the drawing of lines and geometrical forms, is essential to both the educative and practical purposes aimed at in the teaching of mathematics. The foundation on which the teacher works is the power of the child to learn from what he sees and handles, and by the use of what is called his common sense. In this treatment of mathematics, the boundary-lines between arithmetic, mensuration, algebra, and geometry cease to be clearly marked, and the principles which underlie the recent reform in the teaching of geometry should be also at the root of all the instruction in elementary mathematics.

Nature knowledge is the term used in the Syllabus to embrace certain parts of geography, object-lessons, and elementary science. Here again the same fundamental principles should be kept in view, the making use of the child's activity by getting him to do and to make things, the use of means to help him to form vivid mental images, and the encouragement of his interest in his surroundings. The child is in this course to be no mere passive recipient of information ; he will acquire knowledge actively rather than receive it passively. The treatment of this branch of instruction will, therefore, make demands upon the resourcefulness of the teacher, in order that he may present it to his pupils in its many-sided aspects.

As nature knowledge brings the child into contact with his natural surroundings, the instruction in civics and morals deals with his social environment. Moral obligations and the right relations of the individual to the family, to society, and to the State, are introduced by lessons in Scripture, in history, and on moral duties and civic institutions. The treatment of English history recommended deals at first with those men and events around which the history of the English people in its broad aspects gathers itself, followed in successive years by a more detailed study. Lessons on civic institutions, and the relations in which the individual citizen stands towards them, will call for very careful treatment. In a country with a comparatively brief history, the study of public institutions and civic obligations should form the foundation of a genuine patriotism. Such a study in its higher reaches is beyond the range of the primary school ; its treatment, therefore, should be adapted to the stage of the mental growth of the child with regard to both the matter and method of instruction. The course, then, will begin with those institutions and functions of government of which the pupil's immediate surroundings will furnish concrete examples, and, as the details of instruction multiply, the tracing of the growth of public institutions will link the present with the past, and furnish the "alphabet to spell out the lessons of history." It is important that, as the pupils reach an age when they can appreciate the rights of citizenship, they should also realise the duties which those rights involve.

Under the heading of Art and Manual Work are embraced certain branches of instruction which should be incorporated in the school course when the necessary material for the purpose is available and the teacher possesses the necessary qualifications. The special aim of this course should be kept in view, in order that the teacher's work may be thorough and effective.

The Syllabus for schools under one teacher provides for the classification of pupils into two divisions. This arrangement will enable the teacher to concentrate his teaching, and thus make it more effective. It will still be frequently found necessary to form sections in one or both of these divisions for pupils of varying attainments in arithmetic and the mechanical difficulties of reading; but, as the necessity for reading the whole of certain reading-books in a definite order is not demanded, and the mechanical parts of arithmetic are treated in a much simplified form, it will be found that children can be more readily grouped together, and the need for many sections can be in most cases avoided.

A greater freedom in the classification of pupils is provided for, since it is based on the child's general development, rather than on his proficiency in one particular branch of study, or his having read certain prescribed books, while provision is made for a special classification of pupils in arithmetic.

The Syllabus for large, completely organised schools provides a course of instruction, first for Infant Classes, and afterwards for each year of the pupil's school life. An Infants' Department is regarded as the first class of a school, and the course prescribed for First Class or Infants' Departments indicates the range of instruction for children up to the age of about 8 years, and will occupy from one and a half to two and a half years, according to the age at which the pupils are admitted. It is considered desirable that, in dealing with pupils under 6 years of age, their occupations in school should be determined on kindergarten principles, and that, while instruction of a more formal character may be introduced after 6 years of age, the whole of the Infant or First Class course should be modified by and specially permeated with the spirit of the kindergarten methods.

The course of instruction for the whole of the Infants' Department being indicated, it remains for teachers in charge of these departments to divide this course into stages and periods to suit the particular circumstances of their schools with regard to the teaching staff and the number and classification of pupils.

In primary schools, with two or three teachers, where there cannot be a teacher for each class indicated in the Syllabus, the principal teacher is free to make such modifications as will admit of grouping classes in some subjects for collective teaching, provided that a continuity in the course of instruction is maintained, and each subject is treated with due regard to the essential principles underlying the Syllabus.

Courses of study are provided up to the Fifth Class, and, as is more fully shown in the explanatory notes, the limits of a distinctly primary course of instruction are determined by the proficiency required from pupils at the termination of the work prescribed for Fifth Class. On passing beyond this stage into Sixth and Seventh Classes pupils are considered as entering upon either higher primary or secondary courses.

It should be clearly understood that this Syllabus is suggestive rather than specific. It is intended to indicate the scope of treatment, and to lay down fundamental principles and lines of direction at various stages of the pupil's progress; but it does not prescribe detailed methods for teaching individual subjects. For the general guidance of teachers typical courses are given in the notes following the Syllabus.

The Syllabus being thus expressed in general terms, it is necessary, in order to provide for systematic teaching, that programmes of work for each half-year be constructed for each class, showing the division of the work into monthly periods and the specific lessons under the various groups proposed for each month. Lesson registers, posted up at the end of each week, should show clearly and fully the subject and scope of the lessons given to each class in each correlated group of studies.

The Principal Teacher or Mistress of Department should also examine each class in detail at least every quarter, and the results gained by each pupil in English and mathematics should be kept for the information of the Inspector.

P. BOARD,

Under Secretary and Director of Education.

PRIMARY
COURSE OF INSTRUCTION.

1905.

NEW SOUTH WALES.

DEPARTMENT OF PUBLIC INSTRUCTION.

SYLLABUS OF PRIMARY INSTRUCTION (A).

Schools organised with one or more classes for each year of the Course of Primary Instruction.

FIRST CLASS OR INFANTS' DEPARTMENT.

Under ordinary conditions, the work of this class will be completed at about the age of eight years.

English.—Reading Primers I and II, and Reader I. Reading sentences composed by the teacher out of words used in the lessons in Primers I and II. Blackboard reading; short sentences (in script characters) chosen by the teacher from the pupils' conversations during the school "Talks." Reading (in Upper Divisions) an approved story book; selected fairy tales and nursery rhymes. Learning simple rhymes.

Making complete sentences on the facts and sentiments of the reading lessons, on suggestions arising out of them, and in oral answering generally. Sentences illustrative of new words.

"Observation Talks" and "Picture Talks" of about ten minutes' duration, the former on topics from the children's experiences, the latter on pictures before the class, giving exercise in the description of things seen, and encouraging free talk between teacher and children.

Opportunity is presented in these talks for inculcating the elements of good manners in conversation.

Correction of errors in the ordinary speech of the children.

Formal graded writing-lessons in letter-formation and in combinations of letters, associating the names of letters with their written forms. Writing words read, at the time of reading, associating the writing of the words by the pupil with the oral expression of them. Writing in copy-books at the earliest appropriate stage. In the later stages of the First Class course, the writing of simple sentences of the pupil's own construction.

Spelling of words in reading-lessons, and of words commonly used by pupils. Word-building. Dictation exercises. Special treatment of common words in which the sounds do not correctly indicate the spelling.

Progress in reading should not be impeded by the child's inability to spell every word in the lessons read.

Quantity, Number, and Form.—The realising of number by counters in the hands of the children. Counting of objects to 10, afterwards to 50, 100, 200. Arrangements of objects in groups. Addition and Subtraction. Numeration and Notation to 10, 100, 200.

Measurement of lengths by sticks of equal lengths as units.

Notions of "times" and "parts." Multiplication and Division. Construction by the pupils of tables to 10 times 12. Division of quantities into parts, and the use of the fractions $\frac{1}{2}$ and $\frac{1}{4}$.

Use of the divided cube for forms of square, oblong, and triangle. Study and drawing of these forms.

Use of the foot-rule in the measurement in feet and inches of objects about the school. Simple exercises in addition and subtraction based on these measurements. Division of the inch into halves and quarters. Drawing of lines of given length in feet and inches.

Mental exercises in the four simple operations dealing with measurements and common things, leading to exercises in abstract number, to give facility in dealing mentally with figures.

Recognition and naming of coins in common use in the State. Relative values of these coins.

Written work to be supplementary to mental exercises with range of number to 200. Adding of single columns to 10, 20, 50, 100. Addition and subtraction to 200. Use of multipliers to 10, with products to 200, and divisors to 10, with dividends to 200.

None of these operations should deal with abstract numbers until the children are first familiar with their use in dealing with quantities of actual things. The pupil should see that they are a means for finding out something he needs to know about common things before they are treated in the abstract.

Nature Knowledge.—Series of lessons on plant and animal life within reach of the children's opportunities for observation. Choice of subject-matter to depend on the location of the school, the nature of the school surroundings, and the seasons. The plants and animals are to be treated as living things in their relations to their surroundings. Growing of plants and flowers, if possible, in the ground, but if not, in pots. Observation and record of the various stages in the growth and development of the plants. Distinguishing colours of natural objects. Free-sketch drawing of objects observed. Direction to be given to admiration of the beautiful, thus leading to the adornment of the school and home.

Observation of appearances of the sky. Use of sand-trays or of plastic material for modelling representations of the geographical features of the locality.

Short and simple selections of poetry—descriptive of natural objects—to be learnt. Picture scrap-books may be formed.

Scripture and Moral Lessons.—Stories from the authorised Scripture lessons—Old and New Testaments—suitable for infants. Stories and fables with a moral purpose. Moral attributes which lie at the foundation of home and school life, such as truthfulness, obedience to parents, family affection, politeness, gentleness, and control of temper. Greetings at home and at school, politeness in question and answer, personal cleanliness. Kindness to animals. Simple proverbs.

Moral teaching should permeate the whole management of the school, and be embodied in the methods of discipline, in the treatment of the children by the teacher, in the "proprieties" and "manners" required from the children, and in the example of the teacher. The moral influence of the teacher should also be felt in the freedom of the playground.

Art and Manual Work.—Exercises in bead-threading, stick-laying, tablet-laying (squares and triangles), weaving, the use of the divided cubes, paper-folding, and paper-cutting.

Mass drawing in coloured crayons of fruit and common objects. Regular geometrical patterns on kindergarten slates. Outline representations of simple familiar objects. Designs formed by simple repetition.

Modelling.—Fruit and simple familiar objects in the round.

[Only to be attempted when the teacher is qualified and suitable material can be obtained.]

Music.—The sense of pitch to be cultivated by imitation of different tones, produced by the teacher's voice or of the sounds of a musical instrument. Singing of simple melodies by ear, correct in pitch and time. Action songs to be taught and practised daily. Actions to be in strict time so as to be actual time exercises. Songs relating to the home and school life of the pupils. Marching songs to be practised when marching into and out of school.

Voice-training.—Practice of the open vowel sounds on notes of varied pitch.

NOTE.—(1) Songs of suitable range to be chosen, say from C to E (or d to m^1); (2) the singing of a verse or two of a song at change of lessons is recommended.

Drill and Physical Exercises.—Lower Section—Free Exercises. First set, deep-breathing exercises. Middle Section—Position of attention. Free exercises. Second set, deep-breathing exercises. Upper Section—Position of attention. Dressing with full intervals. Right and left turn by numbers. Marking time and marching. Free exercises. Third set, deep-breathing exercises.

SECOND CLASS (ONE YEAR).

English.—Reading Australian Reader II and an approved supplementary book. Silent reading for limited periods. Learning short poetical selections.

Correct pronunciation, accurate use of words and sentences and completeness of thought-expression. In this class the answers of the children should, as a general rule, be expressed in complete sentences.

Oral expression by the children of the subject-matter of oral and silent reading. Illustrative exercises on the use of new words occurring in the reading lessons. Oral and written composition of short sentences bearing on a simple topic. Short talks as for First Class.

Spelling of words in the ordinary speech of the pupil and of words in the Reader, with special reference to phonetic elements and to irregularities in the spelling of common words. Word-building. Dictation exercises.

Writing half-text in copy-books and careful writing in spelling tests, composition, and arithmetical work.

Mathematics.—Mental concrete exercises involving the four simple operations falling within the range of the pupils' experiences, both as to the objects referred to and the extent of the numbers employed.

Measurement with foot-rule in yards, feet, and inches, and halves, fourths, and eighths of an inch. Use of set squares and ruler in making lines, squares, and rectangles with given dimensions. Simple exercises based on these measurements.

Construction by the pupil of the "times" table to 12 times 12. Squaring of numbers. Simple factors and square roots, within limits of times table. Exercises in finding $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$,......$\frac{1}{12}$, of given quantities and numbers.

Symbols of operation in addition, subtraction, multiplication, division, and their use in representing the processes employed in concrete exercises.

Equivalent values in pounds, shillings, pence, and farthings, with simple exercises in values.

Exercises to give facility in dealing mentally with abstract numbers.

Written work to be supplementary to the mental and oral work stated above, with operations in number up to 10,000—multipliers and divisors to 100. The four operations in money with sums to £10. Multipliers and divisors to 10. All written work to have a practical application.

Nature Knowledge.—Observation talks. Lessons, in series, on plant and animal life, as illustrated by objects under observation. Sky phenomena and effects of seasonal changes. Surface features of school locality and geographical terms applicable to them. Modelling of surface features in some plastic material. Cardinal points and how to find them.

Lessons on articles of common use.

Scripture and Moral Lessons.—Stories from the authorised Scripture lessons—Old and New Testaments. Stories illustrative of moral attributes, such as respect to school laws, self-help, consideration for others, unselfishness, contentment, truthfulness in word and deed, self-reliance, kindness and courage, punctuality and promptness. Courtesy and clearness of speech, conduct on the street, care of property. Kindness to animals. Simple proverbs.

Art and Manual Work.—Freeline drawing—Objects and foliage composed of simple curves and straight lines, easy symmetrical figures and designs based upon them.

Modelling—As for First Class with increased proficiency.

Brushwork—Single leaves, easy flat blossoms and simple designs based upon these to fill squares.

Modelling and brushwork are to be treated as alternative subjects. Teachers are not expected to take up either unless they have the necessary qualifications and suitable material is available.

Needlework.—Demonstration with oral instruction—Use of thimble and needle. Hemming, commencing work, joining and fastening off threads. Top-sowing. Setting on tapes. Setting hems.

Practice in sewing.—Strips of jaconet or soft calico, hemmed with cotton of two colours to show joining of thread. Strips to be top sewed together.

Pillow-slip, seams top-sewed, felled, and finished with tapes. Work-apron.

Music.—Time and pitch. Easy exercises on the notes of the scale embracing intervals of the third. Time exercises in pulse and hold marks in 2, 3, and 4 pulse measure. Simple melodies and easy two-part songs and rounds.

Drill and Physical Exercises—Boys.—Formation of a class, position of attention, standing at ease, dressing with full intervals, turning by numbers, marking time, marching, also with heels raised, numbering and proving a class, opening out for exercise, saluting, dismissing a class.

Free exercises. *Vide* Section I, Part V, of Drill Manual. Deep-breathing exercises.

Girls.—Same as for boys, omitting saluting.

THIRD CLASS (ONE YEAR).

English.—Reading Australian Reader III, and an approved supplementary book of interesting character. Silent reading for limited periods ; questions thereon. Learning short poetical selections.

Correct speech in all oral work. Exercises in oral composition on the subject-matter of reading-lessons. Use of new words in illustrative sentences. Answers to oral questions to be definite and complete.

Division of the simple sentence into subject and predicate. Combination of subjects and predicates to form simple sentences. Functions of verb, noun, and pronoun. Construction of simple sentences with qualifying words. Functions of adjective and adverb. Narrative composition.

Spelling of words in the Reader, words used in written composition, and common words of irregular spelling. Dictation exercises. Word-building.

Writing of small-hand with double ruling in copy-books. Careful work in all written exercises.

Mathematics.—Mental and oral work.—Measures of length (yards, feet, and inches), weight (cwt., qrs., lb., oz.), capacity (gallons, quarts, pints). Concrete exercises on these and in money, domestic accounts, and simple business transactions. Common applications of the fractions $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$, ...$\frac{1}{12}$.

Measurement of distances about the school premises.

Construction of triangles (given angles limited to those supplied by the two set squares) parallelograms, and circles with given dimensions, using a ruler, set squar and a pair of compasses. Making plans of measured surfaces to scales of 1 inch to the yard or foot.

Symbols of operation—their use continued.

Written Work.—Supplementary to and following the direction of the oral work stated above. The four operations with range of number to 100,000, multipliers and divisors to 1,000, and sums of money to £100.

Simple direct reduction of pounds, shillings, pence, and halfpence. The four operations and simple reduction, in measures of length, weight, and capacity, within the limits above stated. Simple practical applications of one operation.

Nature Knowledge.—Study of geographical features of the school locality, and the operation of natural forces (wind, rain, running water, &c.) as illustrated by them. Illustration of geographical features outside the locality.

Modelling in sand or other material of surface features (hills, valleys, &c.), and making vertical sections from these models. Plans of school and locality. Reading of maps.

Australia in outline. Outlines of important physical features of New South Wales, associated with the larger towns, the main railway routes, and the chief occupations of the people.

Observing and recording simple meteorological phenomena and seasonal changes. Lessons based on these observations.

Lessons in series on plant and animal life, and on articles in common use.

Civics and Morals.—Authorised Scripture lessons—Old and New Testaments, No. 1—to be read. Stories from history and biography, stimulating to self-reliance, the facing of difficulties, benevolence and helpfulness towards the weak, aged, and unfortunate. Good manners in the home and public places. Regard for property. Love of country. Temperance in its relation to health. Simple proverbs.

Stories from Australian History dealing with explorers and progress of settlement.

Lessons on local public institutions, with references to Australian History, when practicable.

Art and Manual Work.—Drawing—Free-line. Objects, simple foliage, and blossoms, involving the use of the ellipse. Sprays of the foliage, dealt with in Second Class. Symmetrical figures. Designs based on the above work. (Use of the pencil should commence in this class.)

Modelling.—Sprays consisting of two leaves as above with fruit. Designs based on this work for rectangular panels and borders.

Brushwork.—Sprays (leaves only). Designs based upon these to fill rectangular panels and borders.

Modelling and brushwork are to be regarded as alternative subjects. Teachers are not expected to take up either, unless they have the necessary qualifications and suitable material can be obtained.

Needlework.—Demonstration with oral instruction—Running and felling. Tuck-running, stitching, gathering, stroking, and setting into a band. Setting on buttons and making button-holes. Setting on tapes for strings and loops. Single darning for thin places. Setting hems of various widths, using a tape measure, also setting "run-and-fell" seams.

Practice in sewing.—Chemise or simple pinafore showing all the stitches taught

Music.—Scale exercises on the strong tones. Time exercises on pulse, half-pulse, and hold marks.

Two-part songs. Rounds for two, three, or four parts. Songs, inculcating love of home and country, sung in unison.

Drill and Physical Exercises—Boys.—Formation of class. Dressing with half intervals. Turnings—judging the time. Marching in line and in file. The diagonal march. Wheeling in file. Variations of step in marching; also with the heels raised. Double march. Formation of fours. Opening out for exercises. Saluting and dismissing. Free exercises. *Vide* Section I, Part V. Deep-breathing exercises.

Girls.—Formation of class. Dressing with half intervals. Turning by numbers. Marking time. Marching to the front and rear and in file; also with the heels raised. Wheeling in file. Changing step while marking time and marching. Opening out for exercises. Free exercises. *Vide* Section I, Part V. Deep-breathing exercises.

FOURTH CLASS (ONE YEAR).

English.—Reading Australian Reader IV and an approved supplementary book. Silent reading for limited periods. Learning suitable poetical selections.

Oral statement by the pupil of the subject-matter of the course of reading, and of matter correlative to it, in connected sentences and paragraphs. Sentences illustrative of new words. Use of common prefixes and affixes. Word building. Construction of simple sentences with qualifying words and phrases: Analysis of such sentences into subjects and predicates. Functions of all the words in a sentence. Grouping of two or more statements into one sentence. Punctuation. Accidence of noun and pronoun. Relation of words to one another in a sentence. Constructing sentences with qualifying and modifying clauses. Construction and arrangement of sentences on a common topic. Letter-writing, private and business letter forms.

This course in composition is to be distributed over the year.

Writing of ordinary small hand with single ruling in copy-books. Careful arrangement of work in all written exercises.

Spelling of words in the Reader and in the ordinary written work of the class. Words of irregular spelling. Dictation exercises.

Correctness of speech and clearness and fulness of statement in the oral answering in all subjects.

Mathematics.—Tables of length, area, weight, capacity, and time. Mental operations on the practical use of these, and on the extended use of fractions. Decimal notation. Ratios expressed by fractions, decimals, and percentages. Calculations (based on actual measurement with foot-rule, yard-stick, or chain) of areas of rectangles, triangles, and parallelograms. Drawing of these forms to scale of 1 inch, $\frac{1}{2}$ inch, $\frac{1}{4}$ inch, and $\frac{1}{8}$ inch to the foot. Study of the properties of these figures experimentally. Use of the protractor.

Expression of quantity by literal symbols. Use of them with symbols of operation. Abbreviated methods of mental calculation in common use. Oral statement of processes employed in the arithmetical work of the class.

Written work based on the oral and mental course with extended range of quantity and number, but avoiding magnitudes that are not in common use. Domestic and mercantile transactions dealing with value, length, weight, area, and time. Exercises on fractional values as expressed by vulgar fractions, decimals, and percentages. Simple practice.

Nature Knowledge.—The continents in broad outline, associating with them the products that Australia exports directly to and imports from them. Main steamer routes from Australia to British and foreign ports. Europe; physical features associated with the chief towns, with climatic conditions, and with commercial products. Meridians and parallels.

Lessons in outline on the human frame, in relation to the laws of health, and to "First Aid."

Lessons in series on plant and animal life *or* Physiography, *or* on objects of common use which furnish illustrations of the application of elementary scientific principles. Collecting specimens illustrative of Natural History. Drawing diagrams of simple implements and machines referred to in the lessons.

Mechanical inventiveness frequently appears at this stage and should be encouraged.

Civics and Morals.—Authorised Scripture lessons—Old and New Testaments, No. 1—to be read. Lessons on duties to parents, relations, and friends. Duties to self. Care of the body. Choice of companions and books and amusements. Temperance in its individual and social aspects. Industry, honesty in word and work, and regard for the public good as an element of patriotism. Courtesy in speech and behaviour. Treatment of animals.

Public Institutions further considered. (See notes.)

English History—A first course. (See note.) Leading dates as a principle of order in the pupils' ideas should be committed to memory. The connection between Geography and History should be kept clearly in view.

Art and Manual Work.—Drawing—Freeline. Objects requiring a little knowledge of perspective; simple foliage of a more advanced type than in Third Class; sprays with three or four simple leaves and fruit or blossom; symmetrical figures of fair difficulty.

Modelling—Sprays of three or four leaves.

Brushwork—Sprays similar to those used by the Third Class for modelling.

Designs based on the above work.

NOTE.—Teachers are not expected to take up modelling or brushwork unless they possess the necessary qualifications and suitable material is available.

Needlework.—Demonstration with oral instruction—Work of previous classes. Sewing on buttons, hooks, and eyes. Making button-holes, loops, and eyelet-holes. Sewing on strengthening tapes. Patching in calico and flannel. Darning a hole in stocking web material. Setting hems and seams on the cross of material. Setting tucks by measurement.

Practice in sewing—Drawers with tucks, pinafore, or small dress.

Music.—Interval practice of increased difficulty. Time exercises, introducing rests. Introduction of the staff notation, including names and relative duration of notes—semibreve to quaver inclusive. Easy time exercises in key C, staff notation. Songs in unison, two part songs and rounds.

Drill and Physical Exercises.—*Boys*—Same as for Third Class, but substituting six light dumb-bell exercises for free exercises. *Vide* Section 2, Part 5, of Drill Manual.

Girls.—Same as for Third Class, but substituting six light dumb-bell exercises for free exercises.

FIFTH CLASS.

NOTE.—Pupils should not be promoted to Sixth Class until they have shown, by passing individual tests in English and Mathematics, and by their general knowledge of other subjects, that the Fifth Class Course has been satisfactorily completed.

English.—Reading Australian Reader V, and books distinctly literary in character, but interesting to the pupils. Exercise in the use of a dictionary, atlas, and books of reference. Learning of suitable selections of poetry.

Study of a few poetic selections with regard to their literary characteristics so far as these can be grasped by the pupil.

Oral statement in connected sentences of the subject-matter of the courses in reading and matters correlative to it. Lessons dealing with general topics to arouse intelligent interest in current events, and to give exercise in the oral expression of information about them, and of reflections on them, the pupils being led to search out information for themselves.

Letter-writing—private, business, and official letters. Simple *précis* writing. Construction of the paragraph. Connected treatment of topics about which the pupils have made research. Punctuation. Analysis of sentences into clauses, subjects, and predicates. Relations of the several parts of the sentence to one another. Relations of the noun, pronoun, and verb in sentence construction.

Spelling of words in reading lessons, of words used in written composition, and of words of irregular spelling. Dictation exercises. Word-building.

Writing of small hand in copy-books limited to two lessons per week. Careful arrangement and setting down of all written work.

Mathematics.—Mental operations in common business transactions as for Fourth Class, but of wider range. Exercises involving the use of simple fractions, decimals, and percentages. Percentages applied to interest, ordinary retail discount, profit and loss. Use of abbreviated methods of calculation where applicable. Simplest forms of recurring decimals. Exercises based on information supplied in the commercial column of a newspaper.

Course of experimental geometry throughout the year. Measurement of rectangular volumes. Cubic measure. Measurement of timber. Relation of diameter to circumference of circle with practical applications. Extended exercises on the rectangle and the triangle. Representation by symbols of the processes used in mental solutions. Addition, subtraction, simple forms of multiplication and division of elementary algebraic quantities, as far as these operations are necessary for the solution of easy simple equations. Use of the simple equation in solving easy problems. (Work in algebra optional for girls.)

Written Work.—Four simple operations with extended range of number.

Four operations in terminating decimals.

Exercises in various measures of value, weight, &c., practice, proportion, decimals, and the metric system. The four operations applied to fractions. Percentages. Simple interest. Keeping of simple accounts. Easy exercises in calculating areas and volumes.

Nature Knowledge.—A course of experimental lessons in a branch of elementary science, or lessons bearing on the principles involved in the various processes of local industries. Lessons bearing on agricultural pursuits dealing not merely with agricultural operations with which the pupils may be already familiar, but with such scientific principles as will enable the pupil to understand the reasons for the operations of the farm or orchard, and to appreciate the literature which is intended for the benefit of agriculturists. Lessons in First Aid.

In Girls' Schools, lessons in household economy, food, clothing, domestic hygiene, and care of children should form the greater part of the year's course, instead of the work above stated.

New South Wales more fully treated. The British Empire, Trade connections of Australia. Commerce of Australia illustrated by the commercial columns of newspapers. Lessons on climate.

Map-making. Plans of locality. Measurements aided by plane table and sight ruler (boys only). Parish map. Plans drawn to various scales.

Making of simple graphic representations.

Civics and Morals.—Authorised Scripture Lessons—Old and New Testaments, No. 2—to be read. Lessons on moral courage, pride in thorough work, use of leisure time; value of hobbies; the earning of a living; zeal, self-improvement on leaving school, gratitude to parents and teachers, frugality and thrift, the use and abuse of money. Evils of gambling. Temperance. The Golden Rule.

History of England from Henry VII to the present time. (See notes.)

History of Australia—Lessons on the historical basis and the development of local institutions in Australia down to the present time. The "franchise," and the duties of citizens in promoting the well-being of the community. State and Commonwealth Government.

Art and Manual Work.—Drawing—Objects involving elementary perspective. The more difficult examples of single leaves; sprays and symmetrical figures of increased difficulty; flowers and insects.

Modelling (high relief) and Brushwork—The nature work for freeline in Fourth Class.

Designs based on the above work for such purposes as book covers, wall papers, borders for needlework, &c.

In place of Nature work, easy Commercial drawing may be substituted as—Making freehand sketches with dimensions from actual objects and subsequently drawing these objects to scale. Concise working instructions should be attached to each drawing.

Modelling and brushwork are to be regarded as alternative subjects. Teachers are not expected to take either unless they have the necessary qualifications and suitable material is available.

Needlework.—Different methods of making seams; top-sew and fell; run and fell; hemmed seam; French seam; stitched seam; flannel seam. Insertion of a gusset.

Print patch. Darning a hole in stocking web material.

Darning a three-cornered tear in linen and dress material.

Cutting out in paper the garments made in this and previous classes.

Practice in sewing—Simple cotton blouse, dress or underclothing.

Music.—Staff notation only. Key and time signatures. Exercise in interval singing on the movable "doh" system. The commoner words and signs of expression. Words of "tempo." Songs in unison, two and three part songs.

In teaching singing one of the aims should be the production of a pure and sweet tone.

Practice on the vowel sounds, such as "ah," "i," "oh," "ay," "oo," "ee" (liquid, not hard), is the best method of attaining this end, special care being taken in the production of the higher notes. The correct position of the body should be enforced. Care must be exercised in the choice of songs, (1) as to their range; (2) as to their words and sentiments. The words of the song should be thoroughly learnt and understood before they are sung..

Drill and Physical Exercises.—*Boys*—Same as for Fourth Class but substituting exercise with drill rifles for the dumb-bell exercises. *Vide* Section 4, Part V.

Girls.—Same as for Fourth Class but substituting wand or bar bell exercises for dumb-bell exercises. *Vide* Section 3, Part V.

1905.

NEW SOUTH WALES.

DEPARTMENT OF PUBLIC INSTRUCTION.

SYLLABUS OF PRIMARY INSTRUCTION (B).

Schools under one Teacher will provide for the classification of pupils into a Lower Division and an Upper Division.

NOTE.—It is considered that pupils who enter school at the age of 6 should be prepared to enter the Upper Division at between 9 and 10 years of age.

ENGLISH.

Lower Division.—Reading Primers I and II, and selected lessons embracing about half the contents of Readers I and II. Reading (by pupils in Primers I and II) short sentences composed by the teacher mainly of words contained in the Primers. Reading a suitable story book by pupils who have completed the Primers—such book to be approved. Learning simple rhymes.

Correct pronunciation of words, accurate use of words, and sentences and completeness of thought-expression in the speech of the pupils.

Treatment of subject-matter read, with a view to its meaning being realised—in the case of words by other instances of their use and by pictorial representations of objects in prints and drawings made by the teacher and the pupils—in the case of sentences by enlargements of the notions contained in them. Questions and answers directed to the making of complete sentences about common objects referred to in the reading course, and to the oral expression of the facts and sentiments of the matter read, and of suggestions arising out of it.

Formal graded writing lessons in letter formation and combinations of letters, associating the names of letters with their written forms, advancing at the earliest appropriate stage to writing in copy-books. Writing of words of reading course at the time of reading, associating the writing of the words by the child with the oral expression of them.

Spelling of words in the Readers and the words commonly used by the pupils, together with dictation exercises thereon. Special treatment of words in which the sounds do not correctly indicate the spelling. Word building.

Progress in reading should not be impeded by the inability of the pupils to spell every word read.

Upper Division.—Reading Australian Readers III and IV and approved books, supplementary to the ordinary reading lessons. Learning short poetical selections.

Oral expression of the substance of what is read. Exercises illustrative of the use of new words occurring in the reading course. Answers to questions in all subjects should be expressed with definiteness and completeness.

Division of the simple sentence into subject and predicate. Combination of subjects and predicates to form simple sentences. Functions of the verb and noun. Construction of simple sentences with qualifying words and phrases. Functions of words other than noun and verb as used in a sentence. Grouping of two or more statements into one sentence. Punctuation. Accidence of noun and pronoun. Simple tenses of verbs. Relations of words to one another in the sentence as exemplified by simple parsing. Construction of sentences with qualifying and modifying clauses. Analysis of sentences into clauses and qualifying or modifying phrases. Construction and arrangement of sentences bearing on a common topic. Letter writing. Private business and official letter forms. Recording of observations made in Nature lessons.

Grammar is taught only so far as it assists in an intelligent understanding of the structure of sentences in composition.

Spelling of words met with in the Readers, of words occurring in the pupils' ordinary speech, and of words used in composition, with special reference to phonetic elements and to irregularities in the spelling of common words. Dictation exercises. Word-building.

Writing of small hand in copy-books with double ruling, and at a later stage with single ruling. Careful attention to writing in setting down all written work.

Pupils may be at various stages in dealing with the mechanical difficulties of their reading course, but they should be grouped as far as their stages of progress will permit. The various phases of English will usually supply the teacher with the means of keeping all the other groups of a division profitably employed while the attention of one group of the division is specially directed to the reading.

MATHEMATICS.

Lower Division. Quantity and Number.—The realising of number by means of counters in the hands of the children. Counting of objects to 10, 50, 100, 200. Arrangement of objects in groups up to 10 each; hence addition and subtraction of groups. Writing of numerals to 10. Treatment of groups of ten objects each, and combinations of these with smaller groups; hence notation to 100. Similarly, notation to 200. Measurement of lengths by using sticks of equal lengths as units. Addition and subtraction based on these measurements, and also dealing with familiar objects.

Combination of equal groups of objects and partition of large into smaller equal groups leading to the notion of "times" and "parts." Hence multiplication and division. Construction by the pupils of the "times" table to 10 x 12. Similarly, illustrations of the fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, ... $\frac{1}{10}$. Division, using these parts.

Use of the foot-rule. Division of the inches into halves and quarters. Exercises in measuring things about the school. Measurement with the yard-stick or tape-measure in yards, feet, and inches.

Continuation of the "times" table to 12 x 12. Squaring of numbers. Simple factors.

Names and relative values of coins in ordinary use. Equivalent values in shillings and pence and halfpence. Simple mental exercises on measurements. The four simple operations, dealing with familiar things leading to exercises in abstract number to give facility in dealing mentally with figures. Gradual extension of these exercises in the various stages of the pupils' progress.

Symbols of the four arithmetical operations and their use in expressing mental progress.

Written work to be supplementary to the mental work stated above, following in the same direction with operations in notation, addition, subtraction, multipliers to 12, and divisors to 12, gradually increasing with the pupils' progress, but not exceeding 10,000 in range of number in this division. The four operations in simple sums of money.

These operations should not deal with abstract numbers until the pupils are first familiar with their use in dealing with quantities of actual things. The pupil should see that they are a means for finding out something he needs to know about the common objects around him, before they are treated in the abstract.

Upper Division.—Mental exercises in reduction of money. Measures of weight, distance, area, time, capacity, and volume, gradually developed throughout the course.

Exercises (mental) with the four operations applied to value, domestic accounts, simple business transactions, profits and losses. Use of abbreviated methods applicable to mental calculations.

Extended use of simple fractions from $\frac{1}{2}$ to $\frac{11}{12}$, with practical applications. Decimal notation. Use of decimals in common transactions. Ratios expressed as percentages.

Measurements of distances and dimensions about the school premises. Making of plans of measured areas to scale of 1 inch to a mile, yard, or foot, also to such a scale as $\frac{1}{8}$ inch to a foot. Division of rectangles into units of area. Areas of rectangles, parallelograms, and triangles. Extended use of symbols of operation.

Written Work.—Extended use of the four simple operations to larger numbers and quantities, but avoiding all magnitudes beyond those in common use. Domestic and mercantile transactions in value, length, area, weight, time, capacity, and volume. Four operations in simple vulgar fractions and in decimals, with practical applications. Averages. Practice and proportion. Finding of simple interest on a given principal. Savings Banks. Keeping of simple accounts. Cheques. Bank notes. Promissory notes. Areas of squares, rectangles, and triangles, volumes of rectangular solids.

(For boys).—Rules for finding the contents of heaps of road-metal, tanks, and wells. Measurement of timber, sawn and in the log.

Written work should be supplementary to the mental and oral course, each section of the subject being gradually developed throughout the course. See also note to Lower Division work. The typical course of lessons given in the notes will assist the teacher in grading his lessons, and show the limitations of the range of instruction.

NATURE KNOWLEDGE.

Lower and Upper Divisions Combined.—"Observation Talks" and "Picture Talks" of about ten minutes' duration, once or twice a week, on topics from the pupils' experiences, or on pictures before the class, giving exercise in the description of things seen, by encouragement of free talk to the teacher by the children.

Opportunity is presented in this exercise for inculcating the elements of good manners in conversation.

Series of lessons on plant and animal life and common objects within reach of the pupils' opportunities for observation. Plants and animals treated as living things in relation to their surroundings.

Advantage should be taken of the school surroundings to encourage observation of the development of plant life. Growing of plants, where practicable, in boxes or in the school-ground, with observation of the various stages of growth. Direction to be given to the admiration of the beautiful, leading to the adornment of school and home. Drawing from objects under observation.

Upper Division.—Lessons in outline on the human frame in relation to the laws of health, and to "First Aid."

Lessons bearing on agricultural pursuits, dealing not merely with agricultural operations with which the pupil is already familiar, but with such scientific principles as will enable him to understand the reasons for the operations of the farm or orchard, and to appreciate the literature which is intended for the benefit of agriculturists. Lessons on local industries other than agricultural.

Observation of seasonal and meteorological changes and the keeping of records respecting them. Use of rain-gauge, barometer, and thermometer.

Geography.—The apparent movements of the sun. The cardinal points. The mariner's compass. The features of the school locality. Plans of the school and its surroundings. Elementary surveying with the plane table and sight ruler (boys only). Physical features of the district. Use of sand or some plastic material to illustrate these features, as well as the geographical features of places beyond their district. Reading of maps. Use of parish map. Map making.

General outline of the continents, with fuller treatment of New South Wales, Australasia, and Europe. In the treatment of Geography, the effects of the chief agents of change (air, water, heat, &c.) should be dealt with, together with the important towns, and the industries and character of the people. Some of the lessons in Nature Knowledge can most effectively be given out of doors.

CIVICS AND MORALS.

Lower and Upper Division.—The authorised Scripture lessons—Old and New Testaments, Nos. 1 and 2—to be read by the Upper Division, and made the basis of moral teaching to the whole school. Temperance and its advantages to the individual and the State. Stories illustrative of such virtues as truthfulness, helpfulness to others, politeness, choice of companions and amusements, self-control, obedience to parents, respect for the aged, and for public property, kindness to animals. Good manners in the home and in public places. Simple proverbs.

Moral teaching should permeate the whole management of the school, and be embodied in the methods of discipline, in the treatment of children by the teacher, in the proprieties and manners required from the children, and in the example of the teacher. The moral influence of the teacher should be felt in a special manner in the freedom of the playground.

Upper Division.—Lessons on local public institutions and on functions of government of which the locality furnishes examples. The franchise. Forms of government in the State and the Commonwealth associated with Australian History from 1850. Australian exploration and discovery.

English History.—A systematic course on the epoch-marking men and events, from the time of Henry VII.

Leading dates as a principle of order in the pupils' ideas should be committed to memory. The connection between Geography and History should be kept clearly in view, and the study of existing public institutions should be associated with their history.

ART AND MANUAL WORK.

Lower Division.—Drawing.—Mass drawing in coloured crayons; outline representations of simple familiar objects and foliage composed of simple curves and straight lines. Designs formed by simple repetition.

Modelling.—Fruit and simple familiar objects in the round.

Brushwork.—Single leaves, easy flat blossoms, and designs based upon these to fill squares.

Modelling and Brushwork are to be treated as optional subjects. Teachers are not to attempt either unless they have the necessary qualifications and suitable material is available.

Needlework.—As prescribed for Second Class under Syllabus A.

Upper Division.—Drawing.—Objects involving the use of the ellipse. Articles of every-day use placed suitably for drawing. Sprays and blossoms from indigenous and cultivated plants; shells. Simple plan and elevation drawing.

Commercial Drawing.—Making freehand sketches, with dimensions, from actual objects and implements, and subsequently drawing these objects to scale.

Concise working descriptions specifying the object, its use, material used in construction, and method of construction, should be attached to each drawing.

Modelling.—Sprays consisting of two or three leaves with blossom or fruit. Designs based on this work.

Brushwork.—Sprays of the simplest leaves studied under freeline.

Modelling and brushwork should not be attempted unless the teacher possesses the necessary qualifications and suitable material is available.

Needlework.—As specified in Syllabus A for the Third and higher classes.

VOCAL MUSIC.

Lower Division.—Singing simple melodies by ear, correct in pitch and time. Action songs to be taught and practised regularly; actions to be in strict time so as to become actual time exercises. Songs relating to the home and school life of the pupils.

Marching songs to be practised daily when marching into and out of school.

The sense of "pitch is to be cultivated by imitation of different tones produced by the teacher's voice, or of the sounds of a musical instrument.

Songs of suitable range must be chosen, say from C to E, or d to m^1. The singing of a verse or two of a song at change of lessons is recommended.

Upper Division.—Notation of pitch by means of the modulator. Singing the strong tones in any order, and in different keys. Singing of s, t, r, in any order in suitable keys; the remaining notes of the major scale to be introduced gradually.

Introduction of harmony singing, by the singing of the scale ascending and descending, the second part of the class to commence on "doh" when the first part has reached "me." Simple two-part exercises from the modulator, the teacher using two pointers. Notation of time to embrace "pulse," "half-pulse," and "hold-mark"; the idea of the varied duration of notes may be introduced by writing a simple phrase d, r, m, f, s, and placing above each note a figure indicating the required number of beats, afterwards changing the figures for others. As soon as this exercise can be performed readily, pulse marks are to be introduced.

Voice training.—The aim should be production of a soft, pure, and sweet tone. This can be achieved by the regular practice of the open vowel sounds to the notes of the scale. Special care should be taken in the production of the upper notes. The relative pitch of the notes of the scale should be associated with their scale names.

Choice of School Songs.—As an introduction to two-part singing a few simple rounds may be taught. In selecting songs, special care should be taken that the words and sentiments are suitable. Songs of a moral and patriotic character are specially recommended. All words should be learnt (*i.e.*, not only memorised, but perfectly understood) before they are sung.

The foregoing syllabus refers particularly to the tonic sol-fa notation, but similar exercises in the staff notation may be substituted.

DRILL AND PHYSICAL EXERCISES.

The work in these sections is explained at length in Part III of the Manual of School Drill and Physical Training, issued by the Department for the use of teachers.

NOTES ON THE SYLLABUS.

THE PRIMARY COURSE.

The limits of the Primary Course.

A large majority of the pupils will not reach a standard beyond that of the Fifth Class. The work of this class should therefore round off a distinct stage in the primary course. Upon the completion of it, the pupil should be able to read ordinary English intelligently, make use of his ability to read in further extending his knowledge, express himself in clear and correct language, carry out the most common calculations of trade and business, have a general knowledge of the surface of the earth, some elementary natural phenomena, and the main features of the history of England and Australia, have acquired a degree of skill of hand that will assist him in the use of tools, and a training in moral and civic duties that will form a basis for future citizenship. In girls' schools the course will have been modified to admit of the acquirement of knowledge and skill that will afterwards be of use in domestic and family pursuits.

Promotion to Sixth and Seventh Classes.

Only a limited number of pupils are able to take up the work of sixth and seventh classes, and, regarding fifth-class work as terminating the primary course, only those pupils who have satisfactorily completed it should be placed in higher classes. The head of a department in which sixth and seventh classes are in operation should, therefore, ascertain in the case of each individual pupil, by estimating the general character of his work in fifth class, and by individual examination tests in English and Mathematics, that the primary course has been satisfactorily completed before he is promoted to the higher classes. This condition will make it necessary for some pupils to remain longer than one year in the fifth class, while at the same time, it will furnish a stimulus to industry and care on the part of the older pupils.

ORGANISATION.

What it comprises.

The organisation of a school, as far as it is in the hands of the teacher, is mainly concerned with the distribution of the school time as shown by the time-table, the detailed schemes of instruction as indicated in the programmes, the classification of the pupils, and the mechanical arrangements for facilitating the operations of the school and for aiding the work of instruction.

Schools under one Teacher.

In schools under one teacher the main difficulty that presents itself is that of providing for the continuous and profitable employment of all the pupils during the whole of the school time. The pupils are classified into two divisions, but owing to the irregular influx of beginners, subdivisions for instruction in reading and arithmetic are necessary. In many schools the Lower Division is likely to have three sections, and the Upper Division two sections, as far as these subjects are concerned. The time-table should be so arranged that each section may get its share of the teacher's direct attention in both reading and oral arithmetic, while at the same time the other sections and the other division are profitably employed in silent work. The silent work will embrace written arithmetic, silent reading, composition, writing, transcription, drawing, and (in the Upper Division) map making. The previous preparation by the teacher of the day's lessons and the preliminary laying out of material so that it may be readily obtainable, will contribute to economy of time and the smooth working of the school.

Combinations of Sections for certain Lessons.

Both divisions of the school may be combined for Observation and Picture talks, Moral stories, and daily Physical exercises, these being treated in lessons of about ten minutes each. In these, as well as in the combined lessons on Nature Knowledge, Scripture, and Singing, the teacher needs to adopt the lessons at various points to the powers of the various sections of his school.

Senior Pupils may study from Text-books.

A difficulty is met in some schools under one teacher where there are in the Upper Division some pupils who have reached a standard beyond the majority of that division. To meet the case of such pupils without taking the teacher away unduly from the rest of his school, they should be allowed to study from books in those subjects in which they are too far advanced to make their working with the others profitable. The teacher should, however, see that the study of these text-books is not mere memorising, but that the sense of what is read is intelligently grasped. The systematic making of notes of what is read will be found useful, the notes afterwards forming the material on which a composition exercise is based.

Promotion to Upper Division.

The promotion of pupils from the Lower to the Upper Division will take place when the course for the Lower Division has been covered, but it is not expedient to make promotions more than once a year. As a rule, the pupil who enters school at six years of age should be prepared to enter the Upper Division at between nine and ten years of age.

Classification in Schools with more than one Teacher.

In all except the very large schools, the making of promotions from class to class once a year will best enable the teacher to maintain a fairly uniform standard of attainments in each class. As in many of these schools it is found necessary for the teacher to have charge of more than one class, combinations of two classes may be made for lessons in Nature Knowledge, History, Morals and Civics, by such an arrangement of each year's course as will provide fresh subject-matter for both portions of the combined classes. The total number of pupils in combined classes should not, as a rule, exceed fifty, except for such a subject as Singing. When, as in the case of small schools, there are a few pupils who have passed beyond the highest class of the school, the use of approved text-books should be introduced, so that these pupils may study from them under the teacher's guidance, but without taking up more of his time than he can fairly spare from the rest of his school. In the largest schools, where there is a class for each half-year's work of the school course, promotions should be made half-yearly.

Special Classification for Arithmetic.

While pupils are classified according to their general attainments, it frequently occurs that a few pupils in a class show a rate of progress in Arithmetic different from that in other subjects of the course. Special provision should be made for such pupils by placing them, for their arithmetic lessons only, in the class for which their attainments in Arithmetic render them most fit, and where the instruction in that subject is most advantageous to them. In order that this may be done, it will be necessary to arrange the time-table so that the classes between which these transfers are made may have their arithmetic lessons at the same time.

Programmes of Lessons: their object.

In the construction of programmes of lessons it should be kept in view that the purpose of these documents is to provide a methodically-arranged and graded course of lessons for a definite period, so that fresh subject-matter may be introduced in proper order, and the course of instruction be systematically progressive. In making the programmes the requirements of the Syllabus indicate the scope of the work for each class or division of this school. This work needs to be distributed over successive periods of time in order of difficulty or development.

Programmes of Lessons: their scope and limitations.

Where a year's work is shown in the Syllabus, it should be divided equally between the two half-years, the more advanced portion being dealt with in the second half-year. As the programme is a guide to the teacher mainly with regard to the arrangement of fresh subject-matter in his course of lessons, it is not necessary to indicate in it any methods of teaching or any directions of a general character which are already given in the Syllabus and are applicable not to particular lessons, but to all lessons given in one subject. For example, in connection with reading, the oral expression of the subject-matter is a feature that should enter into all reading lessons, and the statement of it in the programme is not necessary, the function of the programme being to supply *details* of work for each month. The programme in English in Third Class, for instance, would show for each month, the reading-book and the numbers of the particular lessons to be read, the supplementary reading for the month, the special points in spelling and word-building to receive attention, the special feature in sentence construction and the functions of words to be treated, the series and number of the copy-book to be used. In Mathematics would be shown the new features to be treated in oral work and in written work in Arithmetic, and the fresh work to be done with the use of instruments. The programme in Nature Knowledge would show the definite subjects for the lessons under this head for the month. The Syllabus and the programmes together will thus guide and systematise the instruction, the former supplying the general directions to be observed and the latter the details of monthly work. These details should be stated in as concise a form as possible. The programmes should also make provision for systematic periodical revision.

The Lesson Registers and Inspection.

The Lesson Register should show the specific lessons and the scope of the instruction given in each subject in each week, to each class and section of class in the school. The examination made at the annual inspection of the school will be based upon the subject-matter so indicated.

The following is an approximate distribution of time in hours per week for schools with more than one teacher:—

Classes...	1	2	3	4	5
English	10½	11½	10½	9	7½
Mathematics	5½	5½	5½	6½	7
Nature Knowledge	2	1¾	2¼	2¾	3¼
Morals and Civics	1½	1¾	2¼	2¼	2½
Art and Manual Work	2	1½	1½	1½	1½
Music	1½	1	1	1	1
Physical Training	¾	¾	¾	¾	1
	23¾	23¾	23¾	23¾	23¾

Suggested distribution of time in hours per week for schools under one teacher:—

	Low Div.	Upper Div.
English...	11	8½
Mathematics	7¼	6¼
Nature Knowledge	1¼	3¾
Morals and Civics	1	2
Art and Manual Work ...	1½	1½
Music	1	1
Physical Training	¾	¾
	23¾	23¾

NOTE.

1. The above distribution of time is intended to serve as a general guide to the teacher to indicate the relative proportion of school time to be devoted to the various branches of study. It cannot be rigidly adhered to in all schools, and may, therefore, receive such modifications as the circumstances of each school require, a general approximation to this allocation of time being observed.

2. When the school receives visits from clergymen, for the purpose of special religious instruction, the amount of school time to be devoted to secular instruction should be correspondingly reduced.

3. A similar modification will be required in the case of girls who are required to devote two hours per week to Needlework in all classes except First.

ENGLISH.

The securing of Correct Speech.

The Syllabus makes the securing of correct speech one of the fundamental aims in the teaching of English. This includes the correct pronunciation of words, grammatical accuracy, the use of words in their correct signification, and completeness in the expression of the pupils' thoughts. As many inaccuracies of speech are due to carelessness, the teacher's object should be to form in the children right *habits* in speaking. The correct pronunciation of the vowel sounds, the correct use of the aspirate and final consonants may be made habitual with children if due attention be given to the correction of errors of this kind whenever they occur. Grammatical accuracy does not demand a knowledge of formal grammar, it depends rather on the imitation of good models, and requires that errors be corrected as they arise by the substitution of the right expression for the wrong one. The giving of specially made incorrect sentences to be corrected is not advisable; examples of this kind will probably be supplied by the speech of the children themselves, and if they are not, the providing of them is not called for.

Necessity for Full and Complete Answers.

From an early stage onwards, pupils should be required to express themselves fully and completely. An answer conveyed in a word or two is often an indication that the pupil has but an indefinite command of the information sought. It is therefore advisable to require the complete sentence as the form of oral answer from the lower half of the school, while at all stages answers should be given in a form so complete as to fully express the information which the pupil has to supply. In the most advanced classes he should be able to express himself in short paragraphs. Treated in this way, every oral lesson furnishes an exercise in composition, and the child not only acquires facility in the use of language, but secures a more complete command of facts by the full statement of them.

In Arithmetic.

This will be found specially serviceable in the teaching of arithmetic where the pupil who has solved some practical problem will gain much by putting into words the process by which he arrived at the result.

Supplementary Readers: their purpose and kind.

The course in Reading comprises the ordinary reading-books and a supplementary book. With regard to the former, the numerical order of the lessons need not be rigidly followed when, by departing from it, the reading lessons may be brought to bear upon other subjects with which the pupils are occupied. The main purpose of the supplementary reader is to widen the range of the pupils' ideas and to lay the foundation of a taste for reading. To secure this object, the supplementary book for the Upper Division should not be of the nature of an ordinary reader consisting of short extracts and brief narratives, but should be continuous in its subject-matter. It should interest the pupil so that he may learn to look to literature as a source of profitable pleasure. Many books are now published which meet this demand. In order that the benefits of the supplementary books may be fully secured all the pupils of a class should be provided with the same book, so that the subject-matter may form the basis of class treatment. Two reading lessons weekly may be given to this class of book. The supplementary readers should not be used for dictation exercises.

Reading. Method recommended for Initial Stages.

The method recommended for the initial stages of reading is a combination of what are known as the "Look and Say" and "Phonic" methods. By this plan the word is learned and with it the phonic elements of which it is composed. The alphabetic elements are learned after the sound of the word is known. As the pupil passes through the primers, he should be exercised in the reading of sentences written on the blackboard made up of words taken from the reading course. If the class is made familiar with the words, is, are, was, were, and easy pronouns and prepositions, the early lessons can be made interesting by a greater variety of easy sentences than the ordinary reading-books supply.

Getting the sense of what is read most important.

Since before a child can read aloud intelligently he must grasp the meaning of what he reads, the explanation of difficult passages in a lesson should precede the reading of it aloud by the class. When this is done, clear enunciation, fluency, and appropriate expression should be aimed at. Simultaneous reading should be used very sparingly. As the chief use of reading to the pupil in later life is to enable him to get the sense of written and printed language, the exercises in school should train him in that direction, and to furnish additional opportunity for putting reading to this ultimate purpose silent reading is introduced. By this means the pupil is to find out what a book has to tell him, and his success will be tested by his power to tell in his own way what he has read. When a child's inability to grasp the substance of what is read is due to words which he does not understand, the mere giving of synonyms for the difficult words is of little avail; such words should be explained by an illustrative use of them in a setting that is familiar to the pupil, so that not merely the meaning but the *use* of the words may be grasped.

The Learning of Poetry.

The poetry learned in the younger classes should be associated largely with patriotism and Nature and Moral lessons. It is neither necessary nor desirable that the attention of the class should be confined to one lengthy poem. The poetry learned should rather comprise short poems, short selections that are complete in themselves, single stanzas, and also detached couplets or single lines which may be worth learning on account of their literary beauty, or their applicability to something else learned. In selecting poetry for each class, its suitability, both in the range of ideas expressed and the language used, should be kept in view so that it may be appreciated. In the earliest stages pupils are conscious of the attraction of rhythmical lines before they fully understand their beauty or literary merit.

Extended Reading and Clear Enunciation will aid Spelling.

Spelling.—It is expected that the more varied course of reading now provided will materially aid in the improvement of spelling. Increased attention to clearness of enunciation in reading will contribute to the same end. It is specified that the reading course should not be checked in order that the pupil may learn the spelling of every word in his reading lessons.

Pupils to learn Spelling during Reading of Lessons.

During the time devoted to a lesson, that it may be read by the class clearly and intelligently and a command of its subject-matter secured, the spelling of words in it should be learnt as far as time permits, and in this way the majority of the pupils will gain a mastery of the spelling of a lesson. Spelling is learnt more through the eye than through the ear, and should therefore be associated with writing. All the written work of the pupil should furnish exercise in spelling, and importance should be primarily attached to the pupil's ability to spell the common words that come within his own vocabulary.

Correct Spelling to be secured in all Written Work.

When attention is given systematically throughout the school to securing correct spelling in the pupils' written work, in composition, in home exercises, and in the setting down of arithmetic, there will remain fewer words in the reading lessons to which special attention need be given.

Word-building an aid to Spelling.

As spelling takes up a considerable portion of the child's school life, its acquisition will be facilitated and made interesting by the systematic treatment of word-building. The pupil will be enabled by this method to master groups of words at a time. His interest will be excited by the discovery for himself of related words, and by the perception of the relation. The pupil, *e.g.*, who associates with the word "two" the words twice, twilight, twig, twist, twine, twill, twin, twain, and twenty, has learned in an easy manner the essential meaning of the words. Word-building will enable the pupil to discover for himself the values of prefixes and affixes, the method of forming nouns from verbs, adjectives from nouns, &c. Care must be taken that the pupil is not set to learn lists of words whose meaning he cannot grasp, and which he may never require. It is not advisable to place a spelling-book in the pupil's hand. The teacher will, however, find that an up-to-date text-book for his own use will be very helpful.

Examination to be based on Lessons Registered.

The tests which may be applied at an examination of a class will be drawn from the lessons read, and from the scheme of spelling which the Lesson Register shows to have been treated. This should of course be in accordance with the provisions of the Syllabus.

Letters to be learnt with Script Characters.

Writing.—In the initial stages the learning of the script characters of the alphabet should be associated with the writing of the letters. The course should begin with the simplest letter forms and progress to the more difficult.

Words and Sentences to be used as Copies.

Too much time is frequently devoted to the making of strokes and hooks which mean nothing to the child. As soon as possible, combinations of letters should be introduced to form words. When a child can write words, instead of devoting a whole lesson to the writing of a single word several times, the copy should consist of a sentence. The time when the pen may be used is a matter for the discretion of the teacher, the aptitude of the pupils being considered, but as a general rule it will be found that by the time a pupil is able to read the First Reader he has also advanced sufficiently in writing to begin the use of the pen. In the choice of a copy-book, it is important that the same series should be used in the Infants' Department as in the other Departments of the school.

All Pen and Pencil Work should contribute towards Good Writing.

Useful as the copy-book is, ultimate proficiency in writing is not gained merely by formal writing in copy-books. It is gained by writing carefully at all times whatever has to be written, by careful practice over a wide field, as well as by the imitation of models within the limited range of the copy-book. Writing as a subject of instruction should also be held to embrace the making of figures and the careful setting down of arithmetic. Every lesson in which the child uses pen and pencil should contribute to form good handwriting. When this is done throughout a school it should be possible to reduce the number of formal writing lessons in the Fourth and Fifth classes to two each week, and in the higher classes to dispense with them altogether. While in the lower classes correct letter formation, junctions, and spacing must receive special attention in order that a good foundation may be laid, it should be the aim of the teacher to secure in the upper classes not only a neat and legible handwriting, but also such a reasonable degree of speed as will prepare the pupil for the practical ends for which handwriting is used.

Oral Composition to be followed by Written.

Composition.—As has been indicated, all oral answering should be exercise in composition, but from the advanced stage of First Class a certain amount of written composition may with advantage be introduced and used as an aid to spelling and writing. In all written compositions it should be seen, before the pupil is required to express himself on any subject, that he is possessed of some ideas to express, and consequently this exercise would deal with subject-matter that has already been treated in previous lessons, or with which the child's ordinary life makes him familiar.

"Use" of Words more important than Grammar.

Formal grammar enters into the Syllabus to a very limited extent. The whole course to the end of the Fifth Class work embraces only the functions of words and their connection with one another as expressed by the parts of speech and the inflections and case relations of nouns and pronouns and the general analysis of sentences. Examples of the use of a word form the source from which its function is ascertained. The definition of a part of speech is a generalisation that should only be arrived at after it has been found that several words have similar functions to fulfil in the sentence, and may on that account be classified under one name. Though a formal definition may eventually be arrived at, *the use* of the word is the primary and essential matter.

Classification of Topics for Composition.

The following outline scheme of lessons will show how the various elements of composition may be arranged beginning with the Third Class where the formal treatment of the subject as a constructive art is commenced. In order that in each class a definite stage in continuous composition may be arrived at, a broad classification of topics may be made to suit the various classes—Narrative, Descriptive, Explanatory.

Narrative followed by descriptive and explanatory.

The narrative is the simplest form of connected composition and is a suitable aim for Third Class work. This form deals with incidents,—the arrangement of the sentences is determined by time sequence, and the pupil is required to tell of a series of happenings in the time order in which they occurred. In Fourth Class the work leads up to descriptions of objects or scenes, and in Fifth Class to explanatory composition.

Composition. Series of Lessons for Third Class.

Class III.—The fitting together of the elements of the simple sentence *e.g.*, subjects to predicates, predicates to subjects. Conversion of simple sentences from singular to plural form. The use of capital letters and full stops. Expanding sentences by the use of adjectives and adverbs. Construction of interrogative sentences. Conversion of sentences to express present, past, and future time-forms. Arranging simple sentences on connected incidents in time sequence. How to quote dates. A few of the commonest abbreviations, *e.g.*, Mr., Dr., St., names of months, &c.

For Fourth Class.

Class IV.—Expanding sentences with qualifying phrases and clauses. Use of the relative. Rearranging the parts of a sentence to give a fresh form while preserving the sense. Use of the semicolon and comma. Uniting two or more sentences to give conciseness of form by the use of conjunctions, and other connecting words. The arrangement of sentences in a definite order to form connected description. Negative forms of sentence. The fitting in of quotations. Abbreviations continued. Simple forms of private and business correspondence.

For Fifth Class.

Class V.—Fuller study in punctuation. Imperative and exclamatory sentences. Fitting in of quotations, direct and indirect. Use of parenthesis marks. Fitting in of parenthetical expressions into sentences, The making of notes. The working up of notes into paragraphs. Writing of explanations or arguments, *i.e.*, arrangement according to casual relations. Forms of business correspondence. Making a *précis* of a paragraph. Condensed sentences, as in telegrams.

MATHEMATICS.

Work in Mathematics must be practical.

The very practical purposes that mathematical work has to serve in the child's future life should regulate the character of it in the school. The teaching of the subject should aim at the working of practical concrete examples, and in readiness and accuracy in mechanical processes. No part of a child's primary school life should be wasted in attempting to solve problems that have little connection with actual experience, or in working mechanical sums which deal with numbers beyond what he can realise. The mathematical work is therefore arranged on the concentric plan. In the First Class, the four operations are dealt with in numbers up to 200; in the Second, these operations are extended in range of numbers, and also applied to small sums of money; in the higher classes, the previous work is further extended and more widely applied.

The use of Counters.

In the initial stage of teaching Arithmetic the activity of the child can be most profitably employed in the observation and handling of counters. By means of them he may realise number, he may find out for himself the relations between a number and those immediately above and below it, he may analyse the simple numbers and investigate the combinations of numbers, he may separate groups to find differences, combine equal groups to find products, and divide groups into equal parts.

Work must progress from Objects to Numbers.

When the counters have fulfilled their purpose they should be laid aside and abstract number dealt with. While numbers are first of all treated in connection with objects, the essential aim of the elementary work is to give familiarity with the number combinations, and to secure facility and accuracy in dealing with abstract numbers. The use of objects should therefore not be retained too long. The pupil first thinks in terms of objects which he sees, afterwards in terms of number dissociated from the visible objects, and then applies his notions of number to objects not visible to him but about which he can think.

If the various progressive steps in the course be skilfully arranged so that only one difficulty or new feature be presented at a time, then regular and systematic repetition, combined with interesting variation, will ensure rapid progress.

Development of the work, with Concrete Examples for Junior Classes.

Sticks of equal length (2 or 3 inches), such as are used in the Kindergarten exercises, may be employed as units of measurement, the child ascertaining distances in terms of stick lengths. This will lead on to the use of the foot rule, the foot being first understood, then the division into inches and at successive stages, the halves, fourths, and eighths of the inch. The stage at which each new feature will be introduced will depend on the capacity of the pupils to grasp it. The division of groups and the cutting of things into equal parts will illustrate the simple fractions $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, &c., the whole series to $\frac{1}{12}$ being gradually introduced as the pupils' familiarity with larger numbers warrants it. The decimal character of notation may be illustrated with sticks grouped into bundles of hundreds, tens, and units, the pupils first building the numbers up by means of these bundles, and afterwards representing them by figures. In the latter portion of the Lower Division or First Class course, common coins may be introduced, and children should, at this stage, merely learn to recognise them and to know the relative values of those that closely approximate one another in value. It is important that the distribution of the various parts of the Lower Division or First Class work should be in accord with the mental growth of the pupils, and that no new departure should be made until the necessary preliminary knowledge has been acquired. Throughout the whole course, the attempt to crowd too much of the specified work into a short time will lead to confused, half realised, and unassimilated results, and a merely fictitious progress.

Concrete Teaching to be continued in Higher Classes.

In the more advanced classes similar principles should be followed. The pupil should know through his senses what a yard, a pound, a square yard, an acre, &c., actually are before he is required to calculate respecting them.

The use of Common Signs.

The use of the common signs for the four simple operations should be introduced in the Second Class or in the latter part of the Lower Division work in small schools. At this stage, however, complicated exercises on the use of the symbols should be avoided, their uses in the most elementary applications being sufficient. At a later stage, the pupils should be able to employ these symbols in representing processes used in the solution of concrete problems.

The use of Fractions and Literal Symbols.

In the Third Class, the use of fractions confined hitherto to the single divisions, $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, &c., is extended to multiples of these divisions. The phrase "common applications" of these fractions indicates that the class is required to realise what these fractions mean, and to make use of them, but is not required to add, subtract, multiply, or divide them. The pupils, however, in being shown by illustration, the values of these fractions, will learn the equality of some of them. The use of literal symbols is introduced in Fourth Class, together with the continued use of symbols of operation. This is an elementary introduction to the generalisations of algebra, but should grow naturally out of arithmetical processes. It is not, therefore, to be regarded as a separate section of the mathematical work, nor does it demand that special lessons be devoted entirely to it. It merely requires the expression of the simplest processes in a generalised form by means of literal symbols of quantity combined with the commonest symbols of operation.

The Study of Decimal Notation.

The study of the decimal notation which, in its elementary stages, was commenced by the building up of numbers with objects in the First Class, is continued in the Fourth, with quantities less than unity, the principle of place value of figures with which the pupil should be familiar in dealing with whole numbers being now extended to decimals. The course in Fifth Class embraces the four operations applied to decimals, with special reference to the decimal measures of weight, length, and value in most common use.

Progressive steps should be finely divided.

Besides the realistic treatment and the application to practically useful purposes here laid down with regard to arithmetic, the successful teaching of the subject requires that the various progressive steps in the course should be finely divided so that only one difficulty, or one new feature, shall be treated at a time. Where the adult mind leaps over several steps at once, the mind of the beginner must take them one by one, so that in the laying out of the instruction beforehand, this minute subdivision of difficulty needs to be kept in view. Especially is this the case in dealing with the elementary mechanical operations.

The following is a detailed course for classes up to the Fifth, which will determine the range of instruction, and assist the teacher in grading its difficulties :—

FIRST CLASS.

Forming conceptions of the numbers 1 to 10 by means of counters in the hands of the children. Telling by inspection any number of things up to 10. Writing of the digits. Combination of numbers to make totals 2 to 10, and separating these numbers into their elements. Combining equal numbers of things as two fours, three threes. Separating into equal parts. Apply to a variety of things. These combinations in the abstract. (Counters should be put away when dealing with abstract numbers, but all wrong answers should be corrected by reference to them.) Counting to 20. Using one bundle of ten counters, and ten loose ones to give notions of 11, 12, 13, ...20, as 10 and 1, 10 and 2, 10 and 3, &c. Analysis of these numbers to give new combinations as 11 into 6 and 5, 7 and 4, 8 and 3, &c. (Up to this stage it is not advisable to set problems in continuous addition, but interesting variety in concrete examples is essential. The main object so far is to make the pupils thoroughly familiar with the combinations of the simple numbers. Subtraction and simple multiplication and division are only introduced incidentally to give interest and variety to the work.)

Counting 20 to 30, then to 40, and so on, to 100. (Each pupil should have 9 bundles of 10 counters each, and 10 single counters.) Counting by tens, 10, 20, 30, &c., 11, 21, 31, &c., 12, 22, 32, &c., and so on. Significance of digits in numbers to 1009. Writing down of these numbers. Combining of numbers less than 10 with numbers greater than 10, *e.g.*, 16 and 2, 26 and 2, 36 and 2, &c. Addition of three or more numbers.

Subtraction of numbers to limit 100. (Method of "complementary addition" is advised.) Multiplication. Using the counters to construct the various tables, recording the results in writing. Equality of results, *e.g.*, four sevens and seven fours. Apply tables to simple exercises dealing with a variety of articles. With each table, the division of numbers into parts. Application of terms one-half, one-quarter. Illustration by means of divided cube. Division of cube into cubes and other rectangular solids. Counting of edges, faces, and corners. Division of cube to form square and oblong faces. Free-sketch drawing of the faces.

Dealing with numbers 100 to 200 with one bundle of 100, nine bundles of 10, and 10 loose counters. Treatment similar to stage 20 to 100. Writing of these. Addition and subtraction to limit 200. Tables continued to 10 times 12. Multiplication of numbers of two digits by numbers 2 to 10 with products limited to 200. Simple concrete applications. Division similarly with divisors to 9. One-fourth and one-eighth.

Use of foot-rule for measuring in feet and inches. Drawing lines of given length in feet and inches. Reading of halves and quarters of the inch. Simple exercises on measurements, using one denomination (inches or feet).

Recognition of halfpenny, penny, threepence, six-pence, shilling, and florin. Relative values of these.

SECOND CLASS.

Treatment of numbers 200 to 1,000. Notation to 1,000. Addition to 1,000. Use of symbol +. Subtraction within these limits. Use of symbol —. Simple practical applications.

Continue numbers 1,000 to 10,000. Addition and subtraction to these limits with simple practical application. Use of the yard-stick. Measurement of objects in yards, feet, and inches, to quarters of an inch. Exercises on measurements, using one denomination. Making lines of given length, using ruler. Making squares and rectangles of given dimensions with set squares.

Multiplication. Continue tables to 12 times 12. Factors within these limits. Use of symbol ×. Types of various stages, 257 × 4; 684 × 10; 239 × 20, 30, 40; 97 × 50, 60……100; 261 × 13, 14,……19; 137 × 73; 76 × 5 × 13; 29 times 74; find product of 73 and 15. Square 37. Use of factors. Simple exercises, at each stage, making use of multiplication. Division of numbers to 10,000 by divisors to 9. Use of symbols for division as 357 ÷ 8 and $\frac{357.}{8}$ Use of factors in division. Long Division. Types:— 735 ÷ 8, 84 ÷ 21, 98 ÷ 42, 95 ÷ 32, 89 ÷ 27, 89 ÷ 19, 150 ÷ 29, 1,607 ÷ 19, 8,763 ÷ 29. Simple exercises making use of division. Use of fractions—as $\frac{1}{4}$ of 137, $\frac{1}{8}$ of 438.

Equivalent values in shillings and pence (using 12 times table), and in pence and halfpence. Reduction of pounds to shillings, and *vice versâ*. Addition of small sums of money with simple practical exercises.

Subtraction of money. Simple applications. Multiplication by numbers to 12, results to £10. Division of sums to £10 by numbers to 12. Types:—$7\frac{1}{2}$d. ÷ 3, 8s. 4d. ÷ 4, 7s. 6d. ÷ 6, 7s. ÷ 6, 2s. 6d. ÷ 4, 5s. $6\frac{1}{2}$d. ÷ 7, £4 10s. ÷ 3, £9 8s. 8d. ÷ 8, £9 5s. 3d. ÷ 6, £3 7s. 1d. ÷ 7, £3 ÷ 8. Application of fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, ….. $\frac{1}{12}$ to sums of money. Simple exercises in money involving one operation only.

THIRD CLASS.

Notation to 100,000. The four simple operations with number to 100,000, multipliers and divisors not exceeding 1,000. Continued use of symbols + — × ÷ ——. Applications involving one or two operations.

The four operations with sums to £100. Simple practical applications involving one operation. Reduction of pounds, shillings, pence, and halfpence. Meaning of the fractions $\frac{2}{3}$, $\frac{3}{4}$, $\frac{2}{5}$, $\frac{3}{5}$, ……$\frac{11}{12}$. Simple application of them to sums of money.

Avoirdupois weight (lb. oz., then cwt. qrs.) Illustration of these weights. Pair of scales. Four operations and reduction in avoirdupois weight within the limits stated. Domestic accounts in small weights and amounts, *e.g.*, butcher's or grocer's bill.

Measure of capacity (gallons, quarts, pints). Illustrations of these. Common uses. Four operations and reduction. Simple applications of these measures.

Long measure (yards, feet, inches). Four operations and reduction within these limits. Measurements of distances and dimensions. Finding perimeters of square and other rectangular surfaces. Practical applications. How angles are measured in degrees. The angles of set squares. Making triangles of given dimensions with set squares. Finding perimeters of triangles. Making parallelograms, using the angles of the set squares Making circles of given radius. Representing measured distances by lines on scale of one inch to the foot or yard. Representing rectangular surfaces by figures on the same scales.

(It will be sufficient for Third Class to deal with problems on money, weight, capacity, and length, involving one operation only).

FOURTH CLASS.

Exercises on the simple operations, money and weight further extended, embracing the avoirdupois measures in common use. Long tots in addition of money. Reduction of money involving two operations. Troy weight (oz. dwt. gr.). Uses of avoirdupois and troy weights. Measure of capacity extended. Measure of length extended, mile, furlong, rod, chain, and link. Illustrations of these. Relation of ordinary panel of fencing to the rod and chain. Representing distances on scales of one inch to 20 feet, 30 feet, &c.

Time measure (year, month, day, hour, minute, second). Apparent movement of the sun. Modes of measuring time. Reduction. Rates of movement. Practical applications. Four operations applied to the above measures and simple exercises on them involving one or two operations.

Square measure. Drawing with set squares a square yard, square foot, and square inch. Comparison of these from figures drawn. Illustrations of acre, half-acre, quarter-acre, and square chain. Reduction. Marking off rectangles into units of area. Finding areas of rectangles. The measurement of angles in degrees. Drawing of triangles, using protractor. Relation of the triangle to the rectangle experimentally. Area of triangle from base and height. Measuring angles of triangle and finding sum. Drawing of parallelograms of given sides and angle. Relation of angles to each other, experimentally. Equality of parallelogram and rectangle of same base and height; hence area of parallelogram. Practical exercises on square measure involving one or two operations. Drawing of plans of measured surfaces, various scales. (Results experimentally obtained should be expressed by formulæ where suitable and practice given in the application of formulæ.)

Decimals. Place value of figures in simple decimals. Fractional values expressed as decimals and percentages, dealing only with simple fractions in common use, *e.g.*, $\frac{3}{4}$, $\frac{2}{5}$, $\frac{3}{8}$, $\frac{7}{10}$. Simple practice.

(Beyond learning that a perch is equal to $5\frac{1}{2}$ yards, and a square perch equal to $30\frac{1}{4}$ square yards, the Third and Fourth Classes are not required to operate with these relations.) The use of literal symbols is dealt with in mental operations only.

FIFTH CLASS.

The four operations in terminating decimals. Exercises on the dollar and cent. franc and centime. Multiples and sub-multiples of the metre and gram. Simple illustrations of recurring decimals. Practice continued. Simple proportion. Averages.

Ascertaining the part that one quantity is of another and expressing as a vulgar fraction, a decimal, and a percentage.

The four operations applied to fractions. Cancelling. (The simplification of complex fractions is not required. The fractions dealt with should be composed of small numbers, common denominators being found mentally.)

Exercises on weights and measures, common business transactions.

Rates of profit and loss expressed as percentages. Application to simple operations in buying and selling. Percentages applied to ordinary retail discount. Finding simple interest on a given sum. Savings Banks. Bank Pass Book. Deposit slips.

Bank notes. Cheques. Method of keeping accounts of receipts and expenditure. Balancing accounts. Promissory notes.

Making hexagon and octagon. Inscribe square and hexagon in circle. Bisecting a line. Construct an equilateral triangle with side of given length. Construct isosceles triangle with given base and angle. Divide a line into any number of equal parts. Properties of parallel lines. Making of patterns with squares, hexagons, and octagons.

(Boys only).—Cubic measure. Illustration of these measures. Volumes of rectangular solids. How sawn timber is measured. Exercises on this. Approximate method of measuring timber in the log. Measuring heaps of road-metal.

(Boys only).—Relation of diameter to circumference. Finding circumference from given radius, and *vice versâ*. Extended exercises on areas of rectangular and triangular surfaces.

Arithmetic: the treatment to be not exhaustive, but practical and thorough.

It will be seen that no attempt is made to treat any section of the Arithmetic exhaustively, but only so far as is necessary to enable the pupil to meet the common practical requirements of every-day life. Although not exhaustive, the treatment should be thorough as far as it goes—that is, each process should be intelligently grasped and not be the mere application of a rule. In the framing of exercises, the guiding principle should be that the work in school should retain a close connection with the actual requirements of life outside the school, and in the teaching, behind all the words the pupil uses there should be a clear conception of the actual thing, or of the actual process, that the words represent. All the operations of Arithmetic that do not enter into common usage or refer only to special circumstances may be left for more advanced classes.

Experimental Geometry to lead to demonstrational.

The object of the simple experimental geometry introduced into the work of the primary classes is to enable pupils to recognise and construct the common geometrical figures, and to become familiar with the most useful properties of these figures and their application to mensuration. These facts are ascertained experimentally, and general inferences are drawn from the observations thus made. But it should be understood that this practical treatment paves the way for a logical treatment of the subject, that while a certain limited range of results is obtainable by observational methods, there are other geometrical truths that can be ascertained only by processes of logical argument, and hence the experimental should lead on to the demonstrational geometry. While only experimental treatment is possible in the primary work up to the Fifth Class, the higher classes should be prepared to enter upon the reasoning processes required by the proofs in demonstrative geometry.

NATURE KNOWLEDGE.

Scope of Elementary Work.

It is important to bear in mind at the outset that even in infant classes lessons dealing with Nature Knowledge must be based upon some definite plan. Though they are not at first lessons on elementary science they may be given in such a way as to prepare the pupils' minds gradually for the study of elementary science at a later stage. They are something more than merely sentimental or informing talks about natural objects or phenomena. The child first gains knowledge of the things around him through his senses, by seeing, touching, examining new objects of experience, and relating new facts to each other till they form a groundwork of ideas on which to build fresh knowledge. The teacher's work in the primary grades must be founded upon a steady recognition of this fundamental law of the development of the child mind. The pupils must see with their own eyes; hence the choice of subject-matter must depend upon the surroundings of the school and the home. In rural districts a varied supply of material is at hand about which the pupils have already acquired some knowledge in the natural way. This method should be continued, the children's interest in natural objects should be kept alive by wise direction and a desire to know not only the "What," but the "How" and the "Why" of things should be fostered.

Plant and Lower Animal Life recommended for Study.

It will be found that plant life and the lower forms of animal life (insects, &c.) offer the greatest facilities for study in the schoolroom. Even if gardens are out of the question, as in some large town schools, plants can be grown in boxes, pots, and culture fluids. In this way they may be brought under close and continued observation to a degree rarely possible in the case of animals.

Their Life-history to be studied.

As children are more interested in life and movement than in mere shape or structure, they should begin with the study of the life-history of the plant or animal—that is, the root, stem, leaves, flowers, come under notice for the sake of the functions they discharge in helping the plant to live its life as a whole, not in order that peculiarities of structure may be noted. The life history of wild and domestic animals more or less familiar to the pupils will also form part of the Nature Study Course.

Formal Lessons on Physiology unsuitable.

Formal lessons on animal or vegetable physiology, systematic botany, &c., are quite unsuitable for young children, and are not intended to be included in this course.

Both Pupils and Teachers must have an aim.

In every lesson the pupils must have an aim as well as their teacher. They are to be active workers with the teacher, and are to be stimulated to find out as much as they can for themselves. Every lesson must provide its little problem for them to solve—not difficult but sufficient to set them thinking, and to give them the pleasure of making their own discoveries. In this way they are from the beginning being trained in the scientific habit of mind.

Nature Study should train in Language.

But not only is it necessary to put pupils in the way of seeing and examining things for themselves; they must also be trained carefully in giving expression to their observations. Thus Nature Study involves a training in language.

Drawing as a mode of Thought-expression.

Again, drawing as a mode of thought-expression assumes a special significance in these lessons, and affords the teacher and pupil an opportunity of testing the closeness and accuracy of observation which it is one of the aims of these studies to develop. This does not mean that the teacher is expected to become an artist or to make artists of his pupils. The crudest drawings, so far as they represent a real attempt to pourtray an object as the pupil sees it, have a distinctly educational value. The hand is being trained to record what the mind sees through the eye, and pupils may learn by their failures to correct faulty and superficial habits of observation. Allied to this training in self-expression is the learning by heart of short and simple pieces of poetry relating to Nature. Much depends on the teacher's taste and judgment in the choice of verses suitable for little children. Above all, these selections should be real poetry—"To Daffodils" and "The Last Rose of Summer" are examples.

The following schemes are suggested from which *a selection* may be made for the treatment of Nature Study :—

Schemes for Nature Study

Life-history of useful plants—bean, pea, wheat, maize, onion, carrot, potato, sweet potato.

Let the seed germinate under various conditions, viz., on damp flannel, on top of damp soil, in damp sawdust, suspended in a bottle on wire gauze close to water, in a transparent glass tube containing damp soil or sawdust. Pupils will observe each stage in the growth, and record their observations.

Grow the plant or plants in the school garden under ordinary conditions.

Root, stem, leaves, flowers, fruit—Observation of mode of growth. Roots and rootlets; what they do for the plant. How the stem grows; its appearance at different stages; its use to the plant. Contrast stems of various plants. Leaves—drawing of their shapes; how arranged; how they unfold; their colours; the veins in them; why the leaves spread out to the sun; how they help the plant to grow. Flowers—their colours and shape. Drawing of them. The bud and how it unfolds. How it shelters the seed. How the flower attracts insects. Fruit—the covering for the seed; shape of seeds; how they are arranged; how the plant scatters its seeds, pods, and husks. How each part of the plant depend on other parts.

The following course of lessons on the marsh-mallow, extending over the period of the life of the plant, will serve to indicate the treatment of plant life for a second class :—

Observation of the growing plant, to bring under notice its general appearance and characteristics as a living organism.

Study of its root system—tap-root, tiny rootlets, root hairs. Simple experiments with roots of this plant in water. Examination through magnifying glass.

Leaves.—Peculiar shape; how fastened to branch or stem; how water runs down the leaf towards the root; how leaves spread out radially to get at the light and air. Observation of pores of leaves through an ordinary magnifying glass. Baby leaves—why folded up, and how protected from heat by larger leaves.

Flowers.—The bud, how folded up and protected from frost, &c.; how developed into the perfect flower; beauty of the flower, its function; the most important of all—reproduction. Pupils should wait patiently while observing the development of the flower till the completion of its work.

Seed.—From a withered flower pluck the corolla carefully and disclose the seed—compare with the brown cheeses familiar to children.

Seeds produce new plants when the old plant dies.

Why does grass not grow where marsh-mallows are?

The whole plant viewed artistically, beauty of flower, graceful arrangement of leaves. Use and beauty go together—Nature's way.

At each appropriate stage throughout the course, pupils will make drawings of the parts observed, and record their observations.

Insect Life.—Silkworm, bee, ant, butterfly, house-fly, moth, grasshopper, beetle, locust, &c. Development of silkworm from eggs in school. Its structure, food, and habits. The cocoon, chrysalis, and perfect insect. Its work and uses.

Bird Life.—The pigeon, hen, duck, goose, turkey, &c.; magpie, butcher-bird, peewit, wagtail, water-hen, red-bill, crane, crow, parrot, swallow, sparrow, starling. Nests of birds; mode of flight, food, uses. Farmers' friends and enemies.

Animal Life.—Cow, sheep, horse, dog, cat, mouse, rat, opossum, kangaroo, wallaby, rabbit, hare, koala, kangaroo rat. Frog, snake, lizard, earth-worm, snail, &c. Farmers' friends and enemies. Fish and fisheries, shellfish, oysters.

Trees and Timber.—Ironbark, turpentine, other eucalypts, wattle, cedar, pine, beech, rosewood, teak, bean, kurrajong. The forests, the timber-getter, the saw-mill; boards and their uses.

The sky, air, surface of land, and water.

Sunrise, noon, and sunset. Note the object over which the sun is seen to rise throughout the year. Note its position at noon, and its varying height above the horizon. Record the length of the shadow at noon, and the varying length of day and night.

The Air.—Wind. Varying direction. Make graphic representation of the direction of the wind throughout the year, and determine therefrom the prevailing wind for each season. Note the warm winds and the cold winds, the rainy winds and the dry winds. Moisture in the air shown by seaweed, by a string changing tension, or by the appearance of salt and sugar. The conversion of water into vapour by a wet cloth drying in the wind. The conversion of vapour into water—breathing on slate or glass. Clouds on hills, evening mists, fog, dew. Clouds in the sky—characteristic appearances.

Rain.—Note size of drops. Effect of rain on roads; note the channels made in the playground, and the arrangement of sand and pebbles washed to a distance.

Rainbow.—Note succession of colours and relative positions of sun, rain, and observer. Note the varying height of the arc.

Rainbow colours on shells, film of tar, &c. Feathers of birds.

Dew.—Note when formed. Cloudless weather. On what does it lie thickest?

Hoar-frost.—Snow, size of flakes, movement through the air.

Snow-drift.—Snow squeezed into ice.

Hail.—Note when it falls. Examine hailstones. Observe whether it is accompanied by thunder. Thunder and lightning.

The Surface of the Land.—Level or sloping. Simple way of measuring slopes. Height of school and neighbouring hill-tops above the sea-level. Flow of water over the land. Neighbouring creek or river. Water partings. The local river basin. A waterfall; force exerted by falling water. Head of water.

Soils.—Clay, sand, shale, loam, granite, sandstone, quarries within reach of the school. Note how the rocks lie, in layers, in masses without structure, &c.

Notice the stones in the creek, the pebbles on the beach, and, where possible, the sharp edges of ice-worn pebbles. Difference between sand and mud. Crumbling rocks. Effect of frost on soil. Formation of caves, different kinds of rocks; shells and plants in rock. Surface soils, disintegration of rocks, vegetable mould, earth-worms. Varieties of soil and position suited to the growth of certain plants. Seaside trees, riverside plants, monntain plants, heaths, &c. Indigenous and cultivated trees and flowers.

Excursions with definite aim recommended.

Excursions to places of interest within easy reach of the school, properly managed, will prove invaluable in the general scheme of Nature Study; but they will serve their true purpose only when on each occasion a special object is kept in view, a line of investigation carefully thought out and followed, and the pupils' attention fixed on the work to be attempted.

GEOGRAPHY.

Ground-work of Geography to be learnt from Pupils' surroundings.

The groundwork of geography is also laid in the infant school. Just as the pupils have gained their first knowledge of plants and animals by actual contact with them as living things in relation to their surroundings, so also their introduction to geography should consist in a close and attentive study of the locality in which they live. Here will be ample opportunity in most, if not in all, schools of incidentally correlating these two branches of Nature Study. The best, as well as the most interesting, method of obtaining an accurate knowledge of the geography of a country is to travel through it. The child has travelled over his little world again and again. With this little world, the only one that has so far come within the child's experience, a beginning should be made. All its varying features as they present themselves—hill and valley, plain, creek, and river, sea and bay, rock, beach, sand and pebble—are to be noted and carefully described by the pupils. As far as possible they should be led to find out for themselves the part played by each in giving the earth the aspect with which they are familiar.

Modelling recommended.

Modelling in sand or some plastic material, and drawing, at once suggest themselves as valuable aids in giving the pupils a permanent mental picture of what they have observed. Geography thus becomes a realistic study which begins by giving the child clear ideas of the world as he sees it round about him. On this foundation the teacher proceeds to build knowledge of the world that is at present outside the child's experience.

Continental Masses to form next stage.

It may be pointed out here that it is not desirable at this stage to go on extending the pupil's knowledge in ever widening circles, but rather to deal next with continental masses. A child can be led to imagine a whole continent far more easily than a particular portion of it, because the continent as a whole is simpler in general construction than a single district or country.

Playground Relief-maps recommended.

Maps in permanent relief, in the playground, will be useful aids. They should when possible be of considerable size. The pupils should assist in their construction; the older ones will in this way receive valuable lessons in the care and thought necessary for accurate representation, according to the scale chosen. Such maps should not be overloaded with detail. Australia, New South Wales, Sydney Harbour, and the school district, are specially suited for this treatment. Paper pulp will be found excellent material for making relief maps for indoor lessons.

Drawing of Simple Plans and Sections.

The first lessons in plan drawing should be of the simplest character. The pupils may begin with plans of simple rectangular objects in the schoolroom, then the room itself, afterwards the playground, and finally the locality, aided with measurements obtained by means of the plane-table and sight-ruler. The pupils having learned the cardinal points in Second Class may now be taught in their plan drawing the usual method of representing these points on paper.

The idea of a vertical section will best be given by cutting through models of some geometrical solids, such as a cube, parallelepiped, cylinder, cone, and sphere. Then a model of a hill or other geographical feature may be treated in a similar manner.

Use of Thermometer, Barometer, and Shadow-stick.

Pupils should learn to read the thermometer and barometer, and to observe by means of the shadow-stick the altered relative positions of earth and sun during the year. It is neither necessary nor desirable that they should understand the principles of the thermometer and barometer before they begin to put them to practical use. By means of the shadow-stick the line of the geographical meridian may be ascertained with reasonable accuracy. A permanent record of it may be made after a few trials, by letting into the ground a 6-inch board set edgewise. At the equinoxes of March and September the approximate latitude may be calculated. The upper classes should take an active share in this and all similar work. The observation and record of temperature and seasonable changes, the varying height of the sun at noon as indicated by the shadow-stick, and the increasing or decreasing length of the days, will form material on which to base lessons on the forces at work in giving to climate its general character.

More Advanced Work.

Subsequent lessons should follow dealing with the effects of latitude, proximity to the sea, elevation, winds and other causes that produce variations in the conditions upon which climate depends. In the higher classes, further practice in plan and map drawing should be given along with instruction in the elements of mathematical and astronomical geography. Latitude and longitude should be explained. The more obvious proofs of the sphericity of the earth, its motion and its position in the solar system, may now be understood.

The scope of the course in Geography.

In the scheme of instruction thus outlined, geography involves not merely a description of the earth's surface, but also man's place upon it, its effect upon his mode of life, his relations with his fellow-men, and his power to modify its physical conditions so as to minister to his needs.

Specimen courses in Geography.

The following is a typical course of lessons for Third, Fourth, and Fifth classes, relative to the treatment of descriptive geography.

THIRD CLASS.

Australia in outline. An island-continent. Surrounding oceans. Continents lying beyond these oceans. Rough idea of size of Australia (*e.g.*, how long it would take to travel across it). Division into States. Graphical representation of the comparative sizes of the States. The State Capitals, and a few facts about each. How to travel from Capital to Capital. The mountain fringe. The deserts of the interior. The overland telegraph line. Eight or ten of the chief rivers. Modelling of the continent.

New Zealand. Its islands. Chief towns. Its people.

New South Wales. Its three natural divisions and their chief characteristics. The Dividing Range as a watershed. The trunk railways and the chief railway towns. The dairying districts and a few towns in each. The coal-mining towns. The pastoral centres. Gold-fields. Chief rivers as associated with these districts and towns.

(NOTE.—This course will follow after the introductory lessons required by the first two paragraphs given under Nature Knowledge in the Syllabus for Third Class.)

FOURTH CLASS.

The earth as a sphere. Its motions. The poles and the equator. Parallels and meridians. Their use in determining position. How latitude may be ascertained at the equinoxes. The surface of the earth, land and water. The relative positions of continents and oceans. The chief countries in each, with a few important towns. The main water-shed, and about half a dozen of the chief rivers of each continent. Countries which produce the articles in common use imported into Australia. Countries to which Australia exports its products. The ports touched on the main mail steamer routes.

Special study of Europe during the remainder of the year's course.

FIFTH CLASS.

The British Empire. A trip by steamer, Sydney to London, *via* Suez. Colombo, Aden, Egypt, Malta, Gibraltar. To London *via* the Cape. Cape Colony, Natal, British South Africa. To London *via* Canada and United States. Telegraph lines and cables connecting Australia with other parts of the Empire.

England.—London, the Thames, St. Paul's Cathedral, Westminster Abbey, the Tower, the magnitude of the city. Manchester, Ship Canal, cotton. Birmingham and Sheffield, iron. Leeds, wool. Oxford and Cambridge, Universities. Liverpool, Portsmouth, Hull, seaports. Climate and the Gulf Stream. Comparison graphically of London and other cities with some well-known towns in New South Wales.

Scotland.—The people. Highlands and Lowlands. Edinburgh, the centre of Scottish history. Glasgow, ship-building. Aberdeen, Dundee, fisheries.

Ireland.—The people. Occupations. The Lakes. Dublin, the metropolis of Ireland. Belfast, linen, ship-building. Queenstown and Cork, steamers to America.

Graphic comparisons of some of the chief productions of various countries, *e.g.*, coal, iron.

Canada.—The C.P. railway. The Rockies. The wheat areas. The St. Lawrence and the Lakes. Montreal. Quebec. Cod-fishing. Timber industry. Klondyke. Compare graphically productions of Canada and Australia, *e.g.*, wheat, gold.

South Africa.—British, Dutch, and Native population, and their occupations. Cape Town. Table Mountain. The Great Karroo. Natal. The Transvaal. The Veldt. Rhodesia. Johannesburg. Gold. Pretoria. Kimberley. Diamonds.

India.—British rule. Native population. Caste. Valley of the Ganges. Calcutta. Benares. Delhi. Punjaub. The Afghan frontier. Bombay and Madras. Rice. Cotton. Wheat. Jute. Climate. Famines. The Himalayas.

New South Wales in further detail during the remainder of the year's course.

ELEMENTARY SCIENCE.

General aim of the course for Fifth Class.

The object of a course in experimental science is not the mere acquisition of facts, but a training in self-reliance, accurate observation, sound reasoning, and manipulative skill.

The children have already discovered through their Nature Study that they themselves can acquire real knowledge by their own observations and experiences.

Apparatus is of course essential, but specialised and expensive forms should be avoided. The skill and inventiveness of both teacher and pupils will find abundant opportunity for exercise in devising expedients to overcome difficulties with regard to apparatus.

Whenever possible every pupil should perform all the experiments himself, but when this course is impracticable he should have an opportunity of closely observing someone else.

The following hints indicate briefly the lines on which elementary science should be treated in the Fifth Class, so as to be educationally beneficial to those who do not pursue the subject further, and at the same time provide a suitable introductory course for those who take up either Physics or Chemistry in a later stage of their school career.

The experiments given here are merely suggestions; the daily lives and experiences of the children in different localities will supply teachers with abundant material for framing special schemes of work.

Pupils should be led to discover facts for themselves, and make inferences from the results of their own observations and experiments. Demonstrations will thus be only of minor importance.

It is not incumbent on teachers to follow the course given here. Any suitable programme of work will be approved.

It should, however, be steadily borne in mind that a course, to be successful, should not be too far removed from the daily lives and experiences of the pupils. The circumstances of different localities will therefore be an important factor in determining the choice of a suitable course.

The necessity for accuracy in weighing and measuring should be impressed on pupils at all times.

COURSE IN GENERAL ELEMENTARY SCIENCE FOR THE FIFTH CLASS.

1. Forms of matter, solids, liquids, gases; study of the obvious physical properties of common substances. Practice in examination and accurate descriptions of object handled, the tests to be applied to be of such a simple character as scratching, hammering, powdering, wetting with water, &c.

2. Measurement of length—straight, curved, and irregular lines; the diameter of a sphere and similar bodies; determination of the relationship between the diameter and circumference of a circle; averages and mean results.

3. Measurement of area—regular and irregular surfaces; use of the balance to compare areas.

4. Measurement of volume—graduation of glass vessels and their use in determining the volume of irregular solids.

5. The lever, discovery, and proof of the principle of moments, the balance; measurement of mass and weight.

6. Loss of weight in water; relative densities of solids and liquids. Flotation.

7. Elementary study of the effects of heating certain solids and liquids and the air; measurement of the relative rates of expansion in (1) rods of various metals, (2) liquids.

8. The thermometer, determination of fixed points. Observation of temperatures, plotting curves (subsequent to the collection of the necessary data), showing the variation of temperature during the month, season, and year.

Whenever possible there should be practice in the use of the maximum, minimum, and clinical thermometers.

Hints with regard to Treatment.

1. The scale used in measuring should have inches, halves, quarters, eighths, and sixteenths on one edge, and centimetres and millimetres on the other. To avoid errors of observation, the practice of using the scale on its edge should be followed, as in this way the position of the eye will not affect the reading obtained.

2. Curved lines should be measured with a fine thread by adjusting it to the curve in short sections, and then measuring the thread. A pair of dividers may also be used, or a disc may be rolled along the line.

Measurement of the lengths of roads, coastlines, watercourses, &c., taken from maps, will provide interesting exercises. The diameter of a sphere may be measured by placing it between the jaws of a screw wrench, or between two blocks with squared ends.

The relationship between the diameter and circumference of a circle may be determined by wrapping a piece of thin paper tightly round a circular disc, and pricking a hole at the point of overlapping with a needle. On unrolling, the distance between the two holes will be the circumference of the circle, the diameter may be ascertained in the usual way, and the calculation made.

3. The square inch and square centimetre should be drawn, areas of rectangles found by drawing on squared paper and counting the squares, or by cutting out in the paper, weighing and comparing with the weight of the unit of area.

Triangles, parallelograms, trapeziums, &c., should be reduced to equivalent rectangles, and dealt with as above. Circles should be drawn on paper, cut out, weighed, the weight compared with the weight of the unit of area, and the relationship between the diameter and area established.

Irregular figures should be divided into figures familiar to the class, and treated as above, or drawn on paper, cut out, and weighed.

The surface area of solids, such as rectangular blocks, cubes, cylinders, cones, prisms, should be determined by wrapping round with paper, and then estimating the area of the paper by the above methods.

Area of countries, lakes, &c., may be determined by means of tracing paper, cutting out, and weighing.

4. The unit of volume, a cubic inch or cubic centimetre, should be modelled with some plastic material, or cut out of wood.

Vessels to hold a cubic inch and a cubic centimetre or decimetre should be made of cardboard, the edges fastened with gummed paper inside and out, and coated with hot paraffin or beeswax.

A glass cylinder or a suitable bottle should then be graduated carefully in cubic inches or c.c., and the scale marked on the outside either on the glass or on gummed paper.

The volume of an irregular solid such as a stone, a piece of lead, or a screw, &c., may now be found by placing it in a known volume of water in the graduated cylinder and observing the increased volume.

The relative volumes of such solids as cone and cylinder, &c., may now be investigated.

5. The small blade of a penknife broken off and with the ends filed square, should be firmly fixed in the centre of a wooden scale which should be suspended on this fulcrum between blocks of wood, and weights attached by strings at different distances, leading to the discovery and proof of the principle of moments.

The use and construction of the balance should now be explained. The cardboard cubic inch and c.c. should be filled with water and weighed, and the connection between the standards of volume and weight in the metric system established. Blocks of various kinds of native and imported timber should be measured and weighed, and pieces of glass, various metals, and other substances similarly treated.

Definite volumes of liquids, milk, methylated spirit, turpentine, oil, adulterated milk, &c., should also be weighed.

The difference between the spring balance and the balance should now be made clear.

6. Take a piece of lead and weigh it; note down carefully the weight—then weigh the lead suspended in water, compare this weight with the previous one, and subtract, to find out how much less the lead weighs in the water. Then find the volume of the lead by the method previously explained, and observe that the volume in c.c. is the same as the loss of weight in water expressed in grams—*i.e.*, that the loss of weight of the lead equals the weight of its own volume of water.

Repeat this work with pieces of glass and other materials. Find the specific gravity of a penny, a shilling, half-crown, &c.

Take a small stoppered bottle, file a nick along the stopper. The weight of water contained in the bottle will give its volume in c.c. It should then be filled with milk, oil, methylated spirits, vinegar, &c., and the relative densities of these liquids discovered.

Take cubes of different kinds of timber, heavy and light—*e.g.*, red-gum, cedar, box, oak, pine, &c.,—oil slightly and float in water. Measure the depth immersed and the total depth of the cube, and investigate the relationship between these and the relative density of the cubes previously observed.

Take a test tube with a paper scale inside, and by means of shot cause it to float at different depths, and determine from this the law of floating bodies.

Construct and use a lactometer in this way.

7. Take a piece of iron or other metal, through which a hole has been made of just sufficient size to allow the poker to pass. Heat the poker and then try to pass it through the hole; heat both poker and iron and try again, noting the result; cool the poker and try again; finally cool both poker and iron and repeat the experiment.

Observe the method of setting a tyre on a wheel, and compare with the result of an axle running hot.

Take a flask or bottle and fit it with a cork through which a glass tube has been passed. Fill with coloured water, heat and observe the result. Allow to cool and note again the height of the water.

Empty the flask, but leave an index of coloured water in the glass tubing. After wiping the flask dry, warm it by pressing both hands on it. What causes the index to rise? Or, otherwise, fit the empty flask with a glass tube bent at right-angles; attach this to one end of a U-tube in which coloured water has been placed; heat the flask with a spirit lamp, and note the result.

Support an iron rod on two blocks, fix one end securely, and under the other place a needle with a fine stiff straw threaded through its eye. For an indicator, make and fix in a vertical position a cardboard protractor, taking care to have the needle pointing to the centre of the circle.

Heat the rod by burning a definite quantity of methylated spirit under it and note the angle indicated on the protractor. Ascertain what linear expansion this angle is equivalent to by pushing the rod up $\frac{1}{4}$ or $\frac{1}{8}$ of an inch, noting the angle and making the necessary calculation.

Repeat the experiment, using rods of copper, brass, zinc, glass, &c., and the same amount of alcohol. Tabulate the results.

Take a number of 2 oz. glass bottles, fit with corks and fine glass tubes; fill the bottles with water, turpentine, alcohol, &c. Mark the heights of the liquids on the glass tubes with gummed paper. Place the bottles in a pan of water and gradually heat, after a time withdraw the heat and mark the heights of the liquids again; measure and compare the various amounts of expansion. Allow to cool and observe again.

Use one of these bottles to determine which of two cans of warm water is the hotter, and thus lead on to the use and construction of a mercurial thermometer.

8. Take a thermometer; place it in melting ice in a funnel, and mark the point at which the mercury becomes stationary. Take a large flask, file two nicks in the cork, pass the thermometer through the centre in such a way that the bulb is just suspended over the surface of some water in the bottom of the flask. Make the water boil briskly, and mark the point to which the mercury rises. Construct Fahrenheit and Centigrade scales.

Make daily observations of the temperature at 9 a.m. and 4 p.m., and plot them on squared paper. At the end of the month plot a curve showing the variation in the evening or morning temperatures for that month.

When sufficient data have been collected, make seasonal graphs of these temperatures.

Pupils should be familiarised with the use of maximum, minimum, and clinical thermometers if obtainable.

Specimen course in Physiography for Fifth Class.

The following course may be substituted by those teachers who have no opportunity of qualifying themselves to take up a course in experimental science.

Broad treatment only of an elementary character suited to the capacity of the pupils will be required.

1. The form, size, and motions of the earth.

Graphic representations to be made of the varying length of shadow cast by a pole at noon throughout the year and of the length of day and night from actual observation. Determination of solstices and equinoxes.

2. Mathematical divisions of the globe.

Approximate determination of the latitude of the school by observations made in the playground; the sun-dial; standard time in Australia. Determination of the difference in longitude between two or more schools suitably situated by exchange of the local times either by post or telegraphic signal.

3. Distribution of land and water on the globe.

Graphic representations to be made of the relative sizes of continents, oceans, &c.

4. Highlands, plains, and valleys.

Vertical sections of continents and graphs of mean elevation to be made.

5. The ocean, its function, depth, temperature, saltness, and movements.

6. Rivers, lakes, and springs.

7. The atmosphere, physical properties, winds, temperature, snow-line, moisture, evaporation, dew, clouds, rain, snow, climate.

The use of graphs to be continued.

8. The earth's crust. General classification of rocks.

Specimens of rocks and rock-forming materials to be collected and carefully examined. Pupils should be trained to describe accurately any specimens placed before them, giving the obvious physical properties, hardness, &c., and to determine the relative density.

Excursions might be undertaken in order to make the collection of local specimens as complete as possible.

Exchanges with other schools and collectors would economically increase the collections and add interest and variety to the work.

9. Volcanoes and earthquakes.

Attention to be called to local instances of ancient volcanic action, if any.

10. Distribution of vegetable and animal life.

Lessons in Elementary Agriculture.

It is very desirable that, when local conditions make it possible, and the teacher is qualified for the work, the course of elementary science for boys should comprise lessons in the elementary principles of agriculture. The primary school cannot undertake to teach agriculture with any degree of completeness, but the subject may be so treated that the pupils may gain a practical acquaintance with the elementary principles that underlie the operations of the farm, orchard, and garden, and—what is of most importance—their tastes and inclinations may receive a trend towards rural pursuits. In this section of school work it is essential that practical should accompany theoretical instruction. Without the actual practice in the school ground, any theoretical teaching will largely fail in its purpose. In many schools it will be found most convenient to give these lessons to boys when girls are receiving lessons in needlework.

Lessons in Domestic Economy.

In girls' schools, the work in this section for Fifth Classes should deal mainly with subjects related to domestic pursuits and home hygiene. In this connection a course in needlework is provided, and should receive thorough and complete treatment in the primary course. As cookery schools are extended, attendance at them should be encouraged. Besides this, a regular course of lessons throughout the year may deal with such subjects as the following:—

Personal health.—Cleanliness of body. Bathing. Foods. Drinks. Temperance. Exercise. Sleep. Good habits. First aid in case of accident.

Clothing.—Dress. Choice of material. Summer and winter clothing. Washing of clothes. Clothing of children. Beds and bed-making.

The Home.—Cleanliness of the house and surroundings. Washing, scrubbing, and sweeping. Floor coverings. Drainage. Disposal of refuse Ventilation, air and light. Warming of rooms. The furnishing of the rooms. The decoration of the home. The garden. Methodical habits in home management.

CIVICS AND MORALS.

Direct Moral Teaching required.

Apart from the indirect influence of school discipline in the formation of character, teaching of a direct kind is needed, so that the child may form ideals of conduct and be stimulated to act in accordance with them. In the early stages, this is best done by stories with a strong human interest in them.

Scripture Lessons to be read.

Scripture Lessons.—The Syllabus provides for the systematic reading of the authorised Scripture Lessons by all pupils who are sufficiently advanced to be able to overcome mechanical difficulties of the text. It is important that this course should be regularly followed. Pupils whose parents have conscientious objections should be exempted from these lessons.

Abstract Moral Teaching not required.

It is not intended that each of the subjects named in the Syllabus should be programmed for special treatment; many of them might be referred to as opportunity offers during the course of other lessons. The more difficult or unusual should be treated in short lessons of about fifteen minutes' duration. The experience of the teacher will guide him as to the best time and manner in which to impart these lessons. As abstract moral teaching fails to excite much interest in the minds of children, it will be found an advantage to enforce the principles of such teaching by means of examples taken from history, biography, poetry, and fiction, or by means of anecdote, allegory, or fable. Temperance should form a subject for definite instruction.

Use of Stories in Moral Teaching.

Some of the stories will carry a direct moral and afford to the teacher an opportunity for teaching specifically what is right as distinct from what is wrong in some phase of conduct. As the child grows in years, the reasons that underlie right conduct whether in its personal, social, or civic aspects should enter into the instruction. Other stories and narratives will carry no formulated moral, but by their indirect influence on the pupil will help to form his standard of conduct.

Civic Morality.

Moral instruction is also bound up in the teaching of civics. The duties which the individual owes to society, the regard for public interests and public property, the response to the demands which the State makes upon the individual citizen,—these form a large part of that civic morality, the elements of which may be taught in the school and form the foundation of a true citizenship.

General treatment of Civics.

Special lessons on civics, beginning with the Third Class, should first deal with whatever function of government may be illustrated in the school locality. The starting point will, necessarily, vary in different localities, but from the local conditions, the course of instruction will be gradually expanded in the higher classes to embrace the various representative institutions—municipal, State, and Commonwealth—the administration of justice, public taxes, the means of defence, and the responsibilities which these entail on the citizen. No exhaustive treatment of these subjects should be attempted, but as in the other branches of school instruction the range of the teaching will be limited by the powers of the pupils to assimilate the matter presented. In the upper classes, some civic functions can be illustrated by examples carried out by the pupils themselves. The teaching of civics should be closely associated with the teaching of history—in fact should be treated not as a separate subject but as a section of the history course.

Aim in teaching history.

The aim of the teaching of history is not the loading of the memory with a host of unrelated facts and unimportant dates capable of being reproduced for show purposes. The period of school life is, moreover, too short to admit the treatment of history in its complete form. The aim is rather, by a selection of topics, to give such an account of the past as will enable the pupil to have some insight into the present, and furnish him with noble ideals of life and character upon which he may model his own. Such a conception of the aim involves wide and thoughtful reading on the part of the teacher, and ability to realise vividly the ideas and ideals of past times, and the power of graphic narration.

Aids in teaching history.

Few lessons in history can be properly given without constant reference to geography. In the lessons suggested below for Third Class, the routes of the explorers and voyages should be closely followed on maps or blackboard sketches. Towards making the study of history interesting and realistic much aid will be derived from photographs and pictures, from *fac-similes* of old documents, from consideration of existing institutions, laws, and customs, and from the reading of historical tales, biographies, and books of travel, in regard to which the school library will be found of prime importance. The close relation of history to literature should not escape notice. Poetry, songs, old ballads are capable of being used effectively in the teaching of history.

The time devoted to history and civics need not exceed one hour in Third and Fourth Classes, and an hour and a half in Fifth Class per week.

Topics for Lessons in History and Civics.

The following lists of topics in Civics and History for Third, Fourth, and Fifth Classes will furnish materials from which *a selection* may be made for courses of lessons, about one-fourth of the year's lessons being devoted to Civics and the remainder to History.

Third Class—History.—Australia, a *Terra Incognita*. How the veil was lifted by Spaniards, Dutchmen, and Englishmen in succession. Captain Cook's voyage along the East Coast. The coming of the First Fleet. Australia as it was when the white men came. The natives and their customs. Bass and Flinders. Blaxland, Lawson, and Wentworth. Captain Sturt. Hume and Hovell. Eyre. Kennedy. Stuart, Burke and Wills. The pioneer settlers in the interior. The Overlanders. The Gold Diggers. Hargreaves.

Civics.—How villages and towns came to be formed along the coast and in the interior. Roads, bridges, and railways. The first railway in Australia. The post-boy. The mail-coach. Plan of the village or town. Its streets, parks, fountains, town-hall, public school, churches, School of Arts, and hospital. A sea-coast town. Its harbour, lighthouse, pilots, and fishermen. Sydney. A great city. Its trade, Public Buildings, Parks, Schools, and Colleges. The University. The Hospitals. The Fire Brigade. The Union Jack and Commonwealth Flag.

Fourth Class—History.—The English in their original home. Alfred the Great. The coming of the Normans. William the Conqueror. How Norman and English finally blended into one race. Richard the Crusader. John and Magna Charta. Simon de Montfort. Wallace, Bruce, and Llewellyn. The Black Prince. Henry V and the Battle of Agincourt. Joan of Arc. William Caxton. Columbus and the finding of a new world. The Reformation. The English sea-dogs. The Armada. Drake and Raleigh. The struggle for freedom. Pym, Hampden, and Cromwell. The Plague and the Great Fire. William of Orange and Louis XIV. Prince Charlie. Robert Cilve. Hastings. Washington. Nelson on sea, Wellington on land. Napoleon. How England became a manufacturing country. Watt and Stephenson. Growth of communication. Steamships, railways, telegraphs, ocean-cables. The Indian Mutiny. Sir Henry Havelock. Sir Colin Campbell. The South African War. President Kruger. Lord Roberts.

Civics.—A Public Meeting. A Progress Association. A Municipality. The Town Council. Election of Aldermen. Voters and the Ballot. What a Town Council has to do. The holding of the land, freehold, conditional purchase, leasehold, homestead lease, rent. The administration of justice. The policeman, the magistrates, and the judge.

Fifth Class—History.—The discovery of America. The rise of the new learning. How Englishmen lived in the days of Henry VIII. How England's sea power grew in Tudor times. What great men did and wrote in Queen Elizabeth's times. The strife between Parliament and King in Stuart times. Oliver Cromwell and the Protectorate. The Restoration and the fall of the Stuarts. The Bill of Rights. Marlborough. Addison, Swift, and Pope. Walpole. The Jacobite Rebellion. The Seven Years' War and the Expansion of the Empire. William Pitt. How the American Colonies were lost. Washington. The Colonization of Australia. Cook. Banks. Phillip. The French Revolution. Nelson, Wellington, and Napoleon. The Industrial Revolution: change in the life of the people. The Abolition of negro slavery. Wilberforce. How Canada, Cape Colony, New Zealand, and the Australian Colonies became self-governing. Lord Durham's report. How the Government of England became more and more Democratic. Reform Bills of 1832, 1867, 1885. Expansion of the Empire in the 19th century. The Indian Mutiny. The South African War. How Australia became a Commonwealth.

Civics.—What a Parliament is and what its duties are. Sketch of the rise of Parliament. Who may become Members of Parliament. How the people elect Members. An election in the olden times in England. The Franchise. Electorates. Electoral Roll. Electors' Rights. The meeting of Parliament. The Cabinet. The Ministers and their duties. The State Governor. Bills, Acts, Royal Assent. State taxes—land, income, stamp. The Federal Parliament. Defence. The Agent-General, the Governor-General and the connection with the Empire.

ART AND MANUAL TRAINING.

The course in Art comprises Line drawing, Modelling, and Brushwork.

Modelling and Brushwork are to be regarded as alternative subjects; either may be taken with Line drawing when teachers have the necessary qualifications, but both should not be attempted in the same quarter in any class.

Whenever practicable, drawing as a means of expression, should be correlated with other subjects as explained in the notes on Nature Knowledge.

In all classes suitable instruction in the elementary principles of design, *e.g.*, repetition, alternation, balance, radiation, &c., should be given, the simple, natural, conventional, and geometrical forms studied being used as the basis for the drawing of simple patterns, borders, &c.

In this work originality should be encouraged as well as imitation.

Whenever possible, all work should be from the actual subject and not from a sketch or drawing. One of the aims should be to develop in the pupils the power of reproducing from memory any object studied. The examples mentioned as suitable for each class are suggestions showing the gradations of difficulty. The flora of different localities, as well as the home life and daily occupations of the pupils and their parents, will supply numerous other forms worthy of being studied, and from these teachers will have no difficulty in constructing programmes of work properly graded, varied, and interesting.

Freeline drawing.—Line drawing in the earliest stage is best studied under free arm conditions. Each drawing should be done on as large a surface as possible in an almost upright position, nearly at arm's length with coloured or white chalk, crayon, &c.

The large surface provides room for expression and is especially necessary for beginners. Drawing at arm's length gives a special manual training producing a hand accurately responsive to the will. Working on a surface which is nearly upright, ensures the body of the scholar being in a natural position.

The size of the surface on which the freeline drawing is done should gradually decrease, and the medium used should also be allowed to become finer in point, but all the line drawing of the first two classes should be on as large a scale as practicable. After this stage, the pencil should be used by all pupils to reproduce objects studied under free arm conditions with chalk or crayon.

In the higher classes all pupils should be able to draw freely with pencil or pen on paper.

At intervals throughout the year it is advisable to have the whole of the work of each class done on brown, toned, or white paper, and preserved.

The use of a straight edge for the purpose of judging the apparent inclination of edges and lines is advisable, but it should not be allowed to touch the paper.

In the First, Second, and Third Classes, under Syllabus A, and the Lower Division, under Syllabus B, the objects drawn should have no apparent thickness.

The following scheme shows objects of suitable difficulty properly graded:—

First Class.—For mass drawing—String of coloured beads, marbles arranged in geometrical patterns, turnips, carrots, lemons, plums, cherries, pears, and apples, all treated in flat colour.

For drawing in outline.—Knife, spoon, button, wheel, kite, saw, hammer, axe, barrow, and cart.

In all cases where it is possible to have the object in the room, a good picture of it should be shown besides the drawing to be made by the teacher, step by step.

Second Class.—Boy's satchel, blade of a spade, shovel, hoe, &c., side view of a hat or bottle.

The leaf of a Moreton Bay fig, canna, iris, coral, and many varieties of eucalyptus.

Third Class.—Spectacles, links of a chain, hoop in any position, glass jar, flower pot, bucket, horseshoe, boy's collar, feathers, &c.

Leaf of the violet, convolvulus, arum lily, simple ivy, oak, and various trefoils.

Blossoms: stock, wallflower, snowflake, with buds as the rose and sweet pea.

Fourth Class.—Cup and saucer, egg-cup and egg, vase, tea-pot, kettle, flour scoop, jug, coffee-pot, boot, &c.

Oxalis, clover, three and five pointed ivy, falcate leaves of eucalyptus, bramble, rose, &c.

Blossoms or florets: jasmine, geranium, Marguerite, jonquil, &c.

Fifth Class.—Blotting-pad, drawing board lying down, drawing board standing on its edge, brick, row of telegraph posts, a fence, barn, shed, &c.

Single leaves with deeply indented or serrated edges, compound and irregular leaves.

Blossoms: pansy, arum lily, wild rose, periwinkle, tecoma, oleander, and bell-shaped blossoms.

Butterfly and moth.

Lower Division—Syllabus B—Mass drawing.—Rows of coloured beads, string of beads hanging to form an arc, marbles arranged in geometrical pattern, cherries, three or four grapes on stalk, plums, an orange, carrot, potato, radish, lemon.

Leaves of the Moreton Bay fig, cactus, wattle, poplar, clover. The apple, persimmon, peach, marrow, &c.

Front view of a book, school, window, flower pot, cup, egg-cup and egg, hat, broom, brush, clothes-peg, tumbler, trowel, spade.

Upper Division.—Door, boot, knife, scissors, tea-pot, box, table, fork, flower vase, bottle, wine glass.

Corner view of school, row of telegraph posts, fence, parts of plough or implements and machinery in use in the locality, cog-wheel, barrel, tank, &c.

Sprays of Moreton Bay fig, eucalyptus, oleander, ivy, Virginian creeper, sorrel, oak, rose, bean, pea, &c. Simple ferns and grasses.

Blossoms of sunflower, briar, pansy, single oleander, convolvulus, waratah, Christmas bell, &c.

Butterflies, beetles, locusts.

Banana, pine-apple, maize, wheat, barley, oats, &c.

Modelling.

The three grades in this subject are, in the "round," in "high relief," and "low relief."

In the lower classes no tool should be used, but each pupil should have a specimen from which to work.

The following scheme covers the work for all classes:—

First Class.—Fruits and simple familiar objects in the round; the simplest of those studied under mass and outline drawing.

Second Class.—As for First Class, with increased proficiency; in the round, of not greater difficulty than an apple, or a cup and saucer; in high relief, single leaves as Moreton Bay fig, canna, iris, coral, and varieties of eucalyptus.

Third Class.—In high relief, single leaves of violet, convolvulus, arum lily, simple ivy, oak. Sprays of two leaves and fruit, as orange, lemon, peach, &c.

Fourth Class.—In high relief, single leaves as for freeline. Sprays of three or four leaves, as camellia, rose, Marguerite, &c.

Fifth Class.—In high relief, single leaves of deeply serrated and indented edges. Sprays of three or four simple leaves with blossom or fruit.

Lower Division—Syllabus B.—In the round, plum, orange, carrot, potato, lemon, apple, &c. In high relief, single leaves of Moreton Bay fig, poplar, lemon, pear, apple, olive, rose, &c.

Upper Division.—Blossoms in high relief: violet, geranium, marguerite, cosmos, pansy, small sunflower, camellia, rose, hibiscus, oleander. Foliage: clover, ivy, violet, oak, oleander, pepper, Virginian creeper. Undulated leaves, serrated edges.

Sprays containing two or three leaves and blossom or fruit.

Simple geometrical solids.

Brushwork.

This work must be done from Nature, and the scholars' designs based upon natural or conventional forms.

The colours throughout should be flat, no attempt being made to obtain light and shade, but superposition may be practised. The lead-pencil should rarely be used in the Nature work, but the designs should be set out on accurately-constructed geometrical nets or guides.

Work should be on a fairly large scale in order to get scope for free movement. If only one brush be used it should be either No. 6 or 7.

The work outlined in Syllabus A, being based on the freeline work, should present no difficulty in the arrangement of programmes.

Lower Division—Syllabus B.—Examples of foliage as dealt with in freeline with rose leaves, and those of the myrtle, bamboo, pepper, snowflake.

Upper Division.—Blossoms: violet, geranium, marguerite, cosmos, pansy. The foliage dealt with in modelling; leaves and blossoms of narcissus, freesia, native rose. Simple ferns, native and cultivated grasses.

Needlework.

Needlework must be regarded as a branch of Manual Training; as such it develops the general dexterity of the hand, and the constructive faculties of the child, giving her a knowledge of form and size.

As a domestic art it inculcates habits of neatness, cleanliness, thrift, order, industry, and self-reliance, and thus adds much to the home comfort of the individual and family.

Aim.—The aim in teaching needlework is to train the girl so that she will be able without assistance to cut out, set, and make garments, and also to repair them.

Oral Instruction.—With the above aim in view the instruction in this subject should be given orally as class teaching, accompanied by demonstration and illustrations on the blackboard. The pupils should be prepared with material, needles, &c., to do the work demonstrated.

The oral instruction and demonstration should save much time hitherto devoted to individual teaching. When the classes are large the teacher of sewing should have the assistance of another teacher.

Small Stitches.—In sewing, evenness and regularity of stitch, strength, and rapidity of working are more to be desired than microscopic stitches. Very fine sewing which may have an injurious effect upon the eyes of the pupils should not be practised.

Mending.—In order to promote thrifty habits, a complete course of mending has been provided for. On sanitary grounds it has not been considered judicious to insist on actually worn garments being brought to school for repair. In the Sixth and Seventh Classes, however, "Practical home mending" may be taught by such means, as there the girls are old enough to understand that nothing objectionable should be brought into the school.

Fancy Work.—The systematic teaching of fancy work has not been provided for. Those pupils who show themselves proficient in plain sewing may, as a reward, be encouraged to ornament their work with feather-stitching, smocking, or other fancy stitches. and to do some artistic fancy work which will help to beautify the home. In this way needlework may be correlated to art work, and girls taught to distinguish between such art work and tawdry decorations. Lessons on unselfishness are learnt, when girls thus work for the good of the family, and a love of home is fostered.

Cutting Out.—Prominence should be given in the higher classes to the work of cutting out, and the girls should be made expert in cutting with the least possible waste of material. Apart from the present practical utility of such lessons, girls are thus rendered self-reliant and careful. Their reasoning faculties are called into work, and some of their geometrical knowledge may be utilised.

Measurements and Calculations.—Throughout the classes pupils should be taught to measure the quantities of material required for garments; they should learn the price per yard, and calculate the cost of each article made. Such lessons may be correlated to the arithmetic taught. In the upper classes this instruction is amplified by lessons given on the selection of materials, in which it should be pointed out that the lowest priced material, if it would fade, shrink, or not allow of "turning," would not be the most economical. By this means habits of thrift may be acquired.

Sewing Machines.—The elder girls who have completed the course of hand-sewing may be taught to use the sewing machine, in order to obtain more time for practice in the cutting out and construction of garments. In connection with such work good opportunities are afforded for further instruction in neatly finishing off garments by hand.

PHYSICAL EDUCATION.

"A Manual of School Drill and Physical Training," has been compiled by Colonel Paul, and will be supplied to all schools on application. What is meant by Physical Education is explained in an introduction by Dr. Reuter E. Roth; this, with the preface to the manual, should be carefully studied in connection with the text.

Deep-breathing, as explained on pages 27 and 57, should be associated with the short daily practices referred to by Colonel Paul in the preface. Three breathing exercises are described, but by varying the arm and shoulder movements others may be adopted at discretion.

BALMAIN TEACHERS' LIBRARY

HIGHER PRIMARY COURSE OF INSTRUCTION.

HIGHER PRIMARY COURSE OF INSTRUCTION.

SIXTH AND SEVENTH CLASSES.

The Higher Primary Course of Instruction is designed for those pupils who remain at school for one or for two years after completing the Primary Course. As a rule, it will be taken by pupils of an age of from 13 to 15 years.

This course aims at the continuance of a broad general education, with a special direction of the knowledge and training of the pupils towards the class of employment they are likely to enter after leaving school. For some, this entails a preparation for a public examination, but in order to qualify them for such an examination the course of instruction should not be unduly limited. It needs to be recognised in the work of these classes that both boys and girls should acquire at school a preliminary stock of readily available information, a mental grasp, and a general intelligence beyond what mere preparation for an examination will supply.

The boy or girl on leaving these classes should have acquired to a reasonable extent the power of self-direction in study, so that the pupil of 13 may develop into the student of 15 or 16 years of age, carrying into his occupation, or into his further studies the power to direct his own efforts towards the successful accomplishment of the work which he finds he has to do. With this object in view, it is necessary that self-reliant effort on the part of the pupil should accompany the work of the teacher.

As has been shown in the preceding notes, only those pupils should be admitted to Sixth and Seventh Classes who are qualified for taking up the work of these classes by having satisfactorily completed the Primary Course.

The subjects of study in the Higher Primary Course are the following :—

English, Mathematics, Geography, History, Science, Physical Training, Music, Scripture, Drawing (and other Manual Work when practicable), Latin (optional), and French (optional).

The inclusion of Hand Work other than Drawing is contingent upon the necessary provision for it being made. Latin and French should be taken up only by pupils who are likely to remain at school long enough to reach a really useful stage in the study of these languages. The wishes of parents in this matter, and the nature of the future career of the pupil should be considered in this connection, but no pupil who is likely to spend only a few months upon these studies should waste time by entering upon them. None of the remaining subjects should be omitted at any time from the course of instruction, though the treatment of them may be modified to suit the examination or other special purpose for which preparation is being made. When a general course is followed without reference to any examination, the Syllabus indicates the line of study.

ENGLISH.

(First and Second Years.)

Study of the English Author prescribed for the Junior University Examination. Supplementary reading of two or more other books of standard English Literature. Learning of appropriate selections. Elements of Prosody. Composition : narrative, descriptive and explanatory, Re-casting of sentences to give fresh form. Use of figures of speech. Elements of style. Making of notes and working them up into continuous composition. *Précis* writing. Forms of commercial and official correspondence.

The accidence of the noun and pronoun. Tenses and moods of verbs. Syntax. Parsing. Analysis. Division of the sentence into clauses. Relations of clauses. Subject and Predicate. Dependent phrases. Common derivations Derivatives from common roots. Attention to be given to correct spelling and careful handwriting in all written work, and the spelling of the more difficult words met with in ordinary literature.

MATHEMATICS.

(First and Second Years.)

Arithmetic.—Factors and prime numbers. Tests of divisibility by 2, 3, 4, 5, 8, 9. Casting out the nines. Greatest Common Measure. Least Common Multiple. Use of these in operations with vulgar fractions. Decimal notation further studied. Proportional parts. Mixtures. *Relation of units of length, weight, and capacity in Metric System. Simple Interest. Customs Duties: specific and *ad valorem*. Rates. Taxes. Commission. Brokerage. Application of simple equations in finding rate and principal. Commercial documents in common use. Bank notes. Cheques. Promissory notes. Keeping accounts of receipts and expenditure. Balance Sheet. Rates of Profit and Loss. Retail discount. Banker's discount. Exchange.

(For boys only).—Common forms of investment. Capital. Companies. Shares. Nominal value. Paid up value. Market value. Dividends. Government Stocks. Loans. Compound Interest. Use of a table of common four-figure logarithms.

* May be omitted by Girls.

Mensuration (for boys).—Square root. Area of rectangles, triangles, and parallelograms. Areas calculated from maps drawn to given scales. The sides of the right-angled triangle. Measurement of angles. The gradient of a road. Ratios of sides of right-angled triangles with angles 30°, 45°, 60°. Trigonometrical terms for these ratios. Similar triangles. Areas of irregular rectilineal figures. Circles. Concentric circles. Sectors. Volumes of rectangular solids. Spheres. Cylinders. Cones and pyramids.

(The construction and application of, formulæ should be practised.)

Mensuration (for girls).—Rectangles. Measurement of rooms. Calculations of floor and wall coverings. Calculation of lengths of material of given widths. Areas of triangles and circles.

Geometry (for boys).—A course of practical and theoretical geometry. Theorems of Books I, II, and III, as given in recent text-books, and deductions from them.

(For girls).—A course of practical geometry, leading to design.

Algebra (optional for girls).—The four operations. Simple equations. Factors. L.C.M. G.C.M. Fractions. Simple equations with fractions. Simultaneous equations. Graphs. Plotting of points. Graphs of linear functions. Graphical solution of simple simultaneous equations. Quadratics. Indices. Surds.

GEOGRAPHY.

(First and Second Years.)

Descriptive geography continued. Commercial and Political Geography. (See notes.)

HISTORY AND CIVICS.

(First Year.)

Study of events that have most influenced English History. The Constitution of the Government of the States and the Commonwealth of Australia.

(Second Year.)

The growth of the British Empire.

SCIENCE.

(FIRST AND SECOND YEARS.)

A course in any one of the following may be taken up in each year:—Elementary Agriculture, Physiography, Physics, Chemistry, Botany, Geology.

(For girls.)—Domestic Science (one or two years' course).

LATIN (Optional.)

(FIRST AND SECOND YEARS.)

Bell's Concise Latin Course. Beresford's A First Latin Reader.

FRENCH (Optional).

(FIRST AND SECOND YEARS.)

MacMillan's First French Course. Ninet's My First Reader. MacMillan's Second French Course to Exercise 30, with Exercises on the principal irregular verbs—*e.g.*, faire, aller, devoir, pouvoir. Reader: A Simple French Story-book.

Teachers who employ the "Direct Method" may use Bell's French Course, Parts I and II, instead of the above.

SCRIPTURE.

Authorised Scripture lessons to be read (one lesson weekly).

MUSIC.

Increased proficiency in the work prescribed for Fifth Class.

PHYSICAL TRAINING.

Forming up and dressing with half-arm intervals; marking time and marching; also with heels raised; opening out for exercises.

Deep-breathing exercise.—Section 11, Part II; Section 1, Part V.
Arm bending and stretching.—Exercise 4, Dumb-bell set, page 65.
Heels raising, with hips firm and neck firm.—Exercise 3, section 11, Part II, page 29.
Forward bending.—Second practice, Third exercise, Dumb-bell set, page 65.
Lunging.—Eighth exercise, Section 11, Part V, page 59.
Side bends and side swings.—Knee raising and leg stretching.
Deep-breathing exercises.—Section 1, Part V, page 62.

ART AND MANUAL WORK.

(FIRST AND SECOND YEARS.)

Drawing.—Commercial drawing. Increased proficiency in the work specified for Fifth Class.

Geometrical Drawing (for boys).—Construction of scales, enlarging and reducing given figures. Plans and elevations of geometrical solids and simple objects based upon them.

Modelling or Brushwork.—Common garden or wild flowers.

NOTE.—Modelling and Brushwork are to be regarded as alternative subjects. Teachers are not expected to take up either unless they have the necessary qualifications, and suitable material is available.

NEEDLEWORK.

(FIRST AND SECOND YEARS.)

Methods of making placket holes and other openings in garments. Practical home mending.

Lessons in cutting out, with special attention to the relative size of the various parts of a garment.

Lessons on the selection of materials for clothing, with due regard to the quantity required for various garments, cost, wear, and washing.

Practice in sewing.—Cutting out and making underclothing, children's dresses and blouses.

Care and use of the sewing machine.

NOTES.

ENGLISH.

Modification of Course in English. In the case of pupils being prepared for a special examination, the course of instruction in the subject will be regulated by the nature of that examination ; but the general course will in that case be modified to suit the end in view.

Study of a Special Author. The study of English in these classes should embrace the reading of the work prescribed for the Junior Public Examination. This will also include a consideration of the general scope of the work, the historical period to which it belongs, its principal literary characteristics, its allusions, and its treatment of various topics. The author's career should also be briefly dealt with. This should be accompanied by the learning of appropriate selections and felicitous expressions from the work, chosen for their literary force or beauty, or for the value of the sentiments expressed. Each selection, whether consisting of a single line, a sentence, a couplet, or a more lengthened passage, should have a degree of completeness in itself that will admit of its being detached from its setting ; but, considering the age of the pupils, the study of the selected work should not be of that minute character that would necessitate a year's lessons being given to it.

Supplementary Reading. The object of the English Course should be to further develop the interest in literature that the reading in the elementary classes is intended to foster, and also to give the opportunity to the elder pupils to read, under the teacher's guidance, a few of the greatest literary works. With this object in view, it is desirable, when practicable, that the study of the selected author should be restricted to a portion of the year, and supplemented by the reading of other works, interesting and useful in character, treated from the point of view of the general reader rather than the special student of literature. Among the works so read, there should be included such as will enable pupils to understand the allusions to ancient times and scenes commonly met with in literature, and to appreciate some of the great achievements in art and science.

Use of Books of Reference. Pupils of these classes should learn to make use of the dictionary, atlas, and other available works of reference, keeping a record in their books of the results of their research.

Teaching of Composition. Composition may be based upon the chosen author to give exercise in expressing the sense of the work as a whole, and of various parts of it, by descriptive summaries of the action and incident, or the sentiments incorporated in it. The course may also embrace *précis* writing, exercises based on research in the library for information on special topics, descriptions of things seen and visits made, commercial correspondence, accounts of observations made in science lessons, of scenes pictured in geography lessons, and of historical events, or exercises in description drawn from the pupil's imagination.

The making of notes of the oral instruction given by the teacher, and of subject-matter of books, will supply a valuable training in getting the gist of what is heard or read and will prepare the pupil for profitable attendance upon lecture courses after leaving school. Notes so made should afterwards be worked up into continuous composition.

Oral answering in class should aim at expressing a series of connected statements in a complete paragraph, the pupil being required to think "on his feet."

A limited portion of time, about an hour weekly, should be devoted to formal grammar, embracing parsing in full, and the analysis of sentences so far as to show the relations of clauses to one another, the subject and predicate, and the force of qualifying and modifying phrases; but neither the selected author for the year nor the supplementary books should be used to furnish exercises in parsing and analysis, beyond that general analysis which may be occasionally necessary to elucidate the meaning of a passage. Derivations that enter most largely into the construction of English words should be learnt, but it is not desirable that the interest in the books read should be lessened by the learning of derivations of words in them which are of little value to the ordinary reader.

In these classes, pupils should master the spelling of the most difficult words met with in ordinary literature.

MATHEMATICS.

Scope of the Arithmetic Course.

In these classes, the course in arithmetic should be completed, but, as in the junior classes, the practical application of the subject should be kept in view. In this respect, the commercial columns of the newspaper, market reports, and the ordinary requirements of trade and business will furnish the basis for much of the instruction. Commercial operations, with exercises in exchange into the coinage of France, Germany, and America, and questions relating to share transactions and Government stock, together with forms of ordinary business accounts and documents used in commercial and banking transactions, should receive attention. Practice in the metric system of weights and measures will be extended, and the use of a table of logarithms introduced. In the arithmetic course the object should not be the solution of complicated problems, but the application of principles to circumstances that may possibly occur.

Treatment of other Sections.

The mensuration of surfaces and solids, with exercises in measurements and scale drawing, will be extended, theoretical geometry introduced and treated in accordance with modern text-books, the course in algebra continued, and when a course of physical science is taken up it will furnish exercises in mathematical work in a practical form. The making of statistical graphs should also be continued.

Modification in Girls' Schools.

In girls' departments, where a wide range of mathematical study is not so important as is the case with boys, and where studies of domestic concern claim particular attention, less time should be devoted to mathematics. While a progressive course in the several branches is maintained throughout, the extent of the work will be more limited, and the application of it will deal with calculations that will prove most useful to girls. Algebra is an optional subject for girls, being taken up when required by them for a special purpose.

GEOGRAPHY.

The course in geography in these classes should be of such a nature as will supply the pupils with information useful to them in understanding not merely the physical character of the earth's surface, but also the economic conditions which are the results of climate, position, and industrial development. The physical geography, treated in broad outline in the primary course, should be further extended, but all details of information seldom needed should be omitted. The human side of geography is what calls for most attention, so that pupils may carry with them from school a broad conception of the world's commerce and industry, and of the relations and interdependence of various countries and parts of the same country in all that concerns the products and occupations of the people. The products of New South Wales, and the opportunities this country affords for productive labour should be subject to frequent reference, so that boys especially may know the resources of their own country, and the directions in which profitable development is taking place.

The following scheme is one that may be taken up in a general course in geography; but while the lines of treatment are here indicated, teachers are not confined to this scheme.

First Year Course.

New South Wales.—Its physical features, railways, and chief towns. Eastern, central, and western divisions. Its internal trade. Effects of varying seasons on production. Pastoral areas. Wool as a staple product. A sheep station. Treatment, sale, and export of wool. Compare with other countries producing wool. Wheat areas. Varying output. Mode of export. Countries that compete in wheat-growing. Coal-fields. Countries that buy our coal. Relation of coal production to other industries. Dairying districts. Rainfall and soil as affecting these. Artificial grasses. Co-operation in butter making. Other products of the dairy farm. Export of butter. Refrigerating chambers. Export of frozen meat, hides, tallow, &c. Silver and gold production. Conditions affecting the price of the chief exports. How railways help in development. How the towns depend on the country. Coastal trade. Interstate trade. Commodities not yet largely produced but possible. Making of maps at various stages of the course, showing—(1) Railways; (2) Mining areas; (3) Pastoral and agrciultural areas; (4) Forest areas. Further study of Australia and the islands of the South Pacific during the remainder of the year.

Second Year Course.

Commerce. — Generial ideas. Natural products and manufactured goods. Dependence on physical conditions, soil, drainage, shore-line, mineral wealth, climate, and the intelligence and civilisation of the race. Exchange and transportation of goods. Water carriage and land carriage. Home consumption. Export of surplus products.

Chief natural productions of the tropical and temperate zones. Mining and manufacturing centres. Sources of food supply.

Chief submarine cables. Coaling stations. Relation of the Navy to British trade.

The United Kingdom.—Its iron and coal fields. Manufacturing industries. Imports and exports with special reference to Australia. Great sea ports. Trade routes to Australia.

The United States and Canada.—Means of internal communication. Transcontinental railways. Chief products and external trade.

France, Germany, and Russia.—The Trans-Siberian Railway. Trade relations with Australia.

India, China, and Japan.—Peoples, products, and trade.

South Africa.—Its races and chief industries. Trade with Australia.

Physical and Political Geography.—In connection with each of the countries above mentioned, the chief physical features and the form of government should be studied.

HISTORY.

The following courses in history will serve as a guide in the treatment of this subject.

FIRST YEAR.

Racial elements in the British people. Saxon institutions affecting English history. Norman institutions. Industrial conditions from thirteenth to sixteenth century. Introduction of printing. Puritans. Passing of power from the Crown to the people. The French revolution. The development in the Victorian Era. Constitution of the Australian States and Commonwealth in outline.

SECOND YEAR.

Growth of the Empire.

1. Review of the position of chief European Nations as Colonising Powers in 15th and 16th centuries.

2. National characteristics, explanatory of unique colonising power of Britons. Love of sea and adventure, physical endurance, trading spirit, ability to establish themselves as self-governing communities in new lands.

3. Beginning of colonisation. Early maritime adventures—Gilbert and Raleigh, Drake, Hawkins, and Frobisher.

4. Early history of colonisation of America.

5. The old Colonial idea and its system—Colony to be exploited for the profit of the mother country. Navigation Acts.

6. England and France in America. Bearing of Treaty of Utrecht on Colonial expansion.

7. Conquest of Canada. Britain's naval supremacy the chief factor in Conquest.

8. Outlines of development of Canada, with special reference to present political and commercial relations with mother country.

9. Conquest of India.—Naval supremacy again the prime factor. Outlines of British rule in India, with special reference to present condition and relations to Britain.

10. The British in South Africa.

ELEMENTARY SCIENCE.

(FIRST OR SECOND YEAR.)

NOTE.—This course is a continuation of the course provided for Fifth Class. The Fifth Class course should be revised as an introduction to the series of lessons involved in the following scheme.

1. Study of atmospheric pressure, weight of air in apparently empty vessels, use of the U-tube, construction and use of the barometer; barometric curves.

2. Study of the Bunsen or other similar burner used by pupils; glass working; fitting up apparatus.

3. Further study of heat; change of state due to heat, liquefaction and solidification, vaporisation and condensation, latent heat.

4. Study of the evaporation of water, determination of the amount of water evaporated from a dish from day to day when exposed to the air under normal conditions; the wet and dry bulb thermometer; the boiling of water, further elementary study of latent heat.

5. Study of the solvent action of water, determination of the amount of solid matter in natural water, investigation of the effect of temperature on solubility, latent heat of solution, determination of the amount of air dissolved in water, the solvent action of other liquids, filtration, determination of the question as to whether there is a loss of matter during solution.

6. Elementary study of crystallisation, purification and separation by crystallisation.

7. The examination of such common substances as marble, common salt, alcohol, saltpetre, bluestone, sulphur, ammonia, soda, &c.

8. Preparation of common acids and alkalies, *e.g.*, sulphuric acid, hydrochloric acid, nitric acid, vinegar, caustic potash, caustic soda, ammonia, lime-water.

9. Action of acids and alkalies on litmus; formation of salts.

10. Elementary treatment of chemical nomenclature.

HINTS WITH REGARD TO TREATMENT.

1. Take a kerosene tin, place some water in it, make it boil vigorously, and when full of steam solder up the opening at the top and allow to cool. Note the result.

2. Take a flask, boil some water in it, and when full of steam close securely with a rubber cork, allow to cool and weigh. Remove the cork, place it in the pan with the flask and weigh again. Compare with the previous weight.

Immerse an apparently empty flask under water and note the result. Dry the flask, and displace the air in it with coal gas, and compare the weights when full of coal gas and air. Repeat the experiment with carbon dioxide made by pouring dilute hydrochloric acid on marble.

Take a glass, fill with water, cover with a card and invert. Take a U-tube, either made wholly of glass or of two pieces of straight glass tubing connected with rubber. Pour some mercury into this tube, and on top of the mercury in one arm pour alcohol, and sufficient water in the other to make the mercury the same height in both arms. Measure the heights of water and alcohol and compare with the relative density of alcohol. Repeat with other liquids.

Fill a straight glass tube, about 33 inches long, with mercury, and invert in a basin of the same substance, and note the result.

Construct a syphon barometer with the short limb adjustable. Take daily observations at 9 a.m. and at 4 p.m., and plot them on squared paper.

2. Suitable burners for use in places where there is no gas may now be obtained at a very low cost.

3. Take a boiling tube, fill it with water and ice finely pounded. Fit it tightly with a cork through which a thermometer and a glass tube have been passed in such a way that they are just below the cork, and mark the height to which the water rises in the glass tubing.

Wipe the boiling tube dry, and heat it slowly and cautiously.

Note the temperature and watch very carefully the change in volume as the ice melts, and the temperature is raised slowly from 0° C. to about 20° C.

Repeat the experiment and confirm the results. Note the point of maximum density of water and make a graphic representation of the results.

Determine why ice floats, why water pipes burst during a frost, and what happens when a pond freezes.

Heat some ice and water in a beaker in which a thermometer has been placed. What becomes of the heat as the thermometer shows no increase in temperature until all the ice is melted?

Take some hypo., dissolve it in water in a clean flask by means of heat, insert a thermometer, plug the flask with some cotton wool, and place on one side to cool. When cool remove the cotton wool and insert a single crystal of hypo., and note the increase of temperature as the liquid solidifies.

Boil some water in a flask and determine whether the continual application of heat increases the temperature. What becomes of the heat?

Pass steam into cold water and note and compare the increase in volume and temperature.

Spray some ether on the outside of a thin test tube containing water. Explain the result.

Take a known volume of water, observe the temperature, place it in a known weight of copper which has been heated to the boiling point of water, and note the increase in temperature. Repeat the experiment with the same weight of lead, iron, brass, and water. Tabulate and compare the results, and lead on to the treatment of specific heat.

Melt a piece of wax or paraffin in a test tube. Observe the temperature when the wax is nearly melted. Throw in pieces of wax or paraffin when the melting is complete. Observe whether they float.

Determine melting points of such substances as soda, hypo., sulphur, butter, &c.

Determine the boiling points of various liquids and solutions and the effect of an increase in the percentage of solid matter in solution on the boiling point.

4. Place some water in an evaporating basin, heat it and note the result. Determine whether vapour is given off by water under ordinary conditions by weighing a porcelain basin full of water, recording the result and the date, and weighing again from day to day.

Repeat the experiment with drops of ether, carbon, bisulphide, and methylated spirit on the hand to show the coolness arising from evaporation. Determine why wet clothes hung on a line dry, and what conditions favour the most rapid drying.

Mix some ice and salt in a glass and put on one side for half-an-hour, then observe what is on the outside of the glass. Investigate the question as to whether air will contain an unlimited amount of aqueous vapour and lead on to the formation of clouds, rain, and dew.

Contrast evaporation with boiling. Franklin's experiment should be performed to show the influence of pressure on the boiling point of water.

Examine the structure and action of a wet and dry bulb thermometer. Tabulate daily observations of barometric pressure, the readings from the wet and dry bulb thermometer, loss of weight of water in the basin, direction of the wind, and other weather conditions, and determine their interdependence.

5. Place some salt in a glass of water. What happens? Place some salt on a watch glass over a beaker containing water and weigh; dissolve the salt in the water, and weigh the watch glass and the beaker again. Note the result.

Place some quicklime in water, observe what happens. Separate the suspended powder by filtration, heat it strongly and weigh. Has all the lime been recovered?

Examine the filtrate, taste it, evaporate a portion to dryness, and examine carefully.

Investigate the question as to whether water dissolves bluestone, camphor, quartz, paraffin, iron, &c.

Estimate the amount of solid matter dissolved in definite quantities of sea water, rain water, and spring water, by evaporating to dryness and weighing the residue.

Compare a hard water with a soft one, and consider the effect of the common practice of adding soda crystals to a hard water when used for washing.

Make a saturated solution of common salt, and determine the weight dissolved by a given quantity of water.

Make a saturated solution of hypo. in cold water, heat the solution, add more hypo., and account for what happens.

Make graphical representations of the solubility of the different substances handled.

Take a definite volume of water in a beaker, note the temperature, dissolve some nitre in the water, observe the temperature, and explain the result.

Take a flask full of spring water, fit it with a rubber stopper and tube, boil the water, collect and examine the gases given off.

Consider the question of the function of the air dissolved in water.

Since it was found that camphor would not dissolve in water, try it with methylated spirit; try also sulphur with carbon bisulphide, paraffin with ether, &c.

6. In working with saturated solutions it was found that many crystals were separated from the various solutions. Prepare crystals of nitre, sodium sulphate, alum, bluestone, &c. Determine by experiment, with actual crystals or models, the physical properties of crystals.

Mix sugar and chalk together, treat with warm water, filter, wash the residue with warm water, evaporate the filtrate to dryness, weigh and examine. Has all the sugar been recovered?

Take some impure bluestone, dissolve in water, evaporate on the water bath to a limited extent, place on one side to crystallise, separate the crystals from the mother liquid, dissolve again and re-crystallise, compare these crystals with the original impure salt.

Note the method in which different salts are separated from sea water.

7. This is an extension of Section 1. Additional treatment required would include the action of heat on the substances and their melting or boiling points if practicable, their relative density or behaviour under normal conditions when exposed to the air and to common reagents.

8. Expel the water of crystallisation from some copperas, break it into small lumps, place in a retort and heat. The neck of the retort should dip below the surface of water in a test tube. Examine the liquid obtained, heat some in a basin; pour some sulphuric acid in a thin stream into water; note the increase in temperature. Explain why it would be dangerous to reverse the operation.

Place a drop of acid on a piece of paper or a cork; note the result. Pour two or three drops on some sugar; explain what happens.

Grind some sugar and potassium chlorate into powder in a mortar and mix together. Place in a fireplace or the open air, and add one or two drops of sulphuric acid. Compare result with that of the previous experiment.

Similar treatment of the other common acids and alkalies mentioned should follow this.

9. Make an infusion of litmus. Investigate the action of acids and alkalies on blue and red litmus. Prepare a neutral solution and determine the delicacy of the test for an acid or an alkali.

Neutralise nitric acid with ammonia, evaporate the solution to dryness, examine the residue, determine its properties by experiment, and compare them with those of both nitric acid and ammonia.

10. The origin of the old and new names of the different substances handled and the method of naming salts will require explanation. No advanced treatment of chemical nomenclature should be attempted at this stage.

The following is a scheme of lessons which may be taken as part of the Science Course for either the first or second year :—

PHYSICAL GEOGRAPHY.

1. The annual motion of the earth ; the seasons.

2. Further study of the atmosphere ; effect of the rotation of the earth on winds ; cyclones and anticyclones ; weather maps ; the influence of climate on (*a*) vegetation, (*b*) animal life, (*c*) man, and (*d*) commerce.

3. Further treatment of the ocean ; recent explorations in the Antarctic.

4. Forces affecting land surfaces—subsidence and upheaval, weathering and denudation ; action of the wind, water, and varying temperatures. Local illustrations.

5. Further study of rocks ; fossils ; lessons to be learned from fossils.

6. Plains and plateaus—different types ; influence upon man of interior and coastal plains of Australia.

7. Rivers and river valleys. Local study. Artesian wells and limestone caves.

8. Mountains—different types—climate, snow-line, timber-line. Local study Influence on civilisation.

9. Further study of volcanoes ; volcanic necks and dykes. Local illustrations.

10. Formation of soil ; river-made plains, deltas.

11. Shore lines. Study of the coast of New South Wales. Beaches ; cliffs ; Great Barrier Reef.

(Courses in Elementary Agriculture for boys, and in Domestic Economy for girls, will be issued separately.)

LATIN.

The course in Latin aims at enabling the pupils to gain some insight into the qualities of the language of a race which has left indelible traces on modern life and thought. The study should have a beneficial effect in cultivating precision of thought and accuracy of statement, and in furnishing helpful knowledge of the origin and meaning of much of the vocabulary of the mother tongue.

Much may be done to make the study interesting. Too much time should not be devoted to mere grammar and the consideration of exceptions. Grammar, translation, and composition should go hand in hand, the one helping the other, as arranged in the text-books prescribed. From the Latin sentence the pupils will discover the rule embodied. The words of the vocabularies may be fixed in the memory by association with related English words, or, if the pupils are learning French, the passage of a word from Latin through French may be pointed out. Pictures of Roman soldiers, arms, weapons of war, houses and temples, maps, stories of the firmness and courage and constancy of old Roman heroes, will make the subject attractive. The frequent use of Latin question and Latin answer, the early introduction of the forms of the verb to give variety in sentence-making, the learning of proverbial sayings, the reading of short Latin stories, will all help to make the Latin lesson interesting and educative.

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FRENCH.

Alternative courses are set out for those who employ the old grammatical method, and for those who use the new or direct method in teaching. The former, however, cannot fail to be influenced by the new method. As soon as possible the Reader should be placed in the pupils' hands, and reading, translation, and grammar should be closely associated. The pupils should discover the rules of grammar from their reading, and should be exercised in framing questions and answers on the matter read. Each sentence in the grammar should form a peg on which to hang many others.

In the "direct" method the pupils are taught to use the language as an instrument of thought; hence the early lessons are occupied with common things and common actions. The mother tongue is as much as possible excluded from the lesson, and rules of grammar are framed by the pupils themselves. Pupils commit to memory proverbs and poetical selections, and learn to sing simple French songs. Translation from English into French should not be neglected. Thorough drill in grammatical forms is necessary. The books prescribed will be found useful in directing these lessons.

Sydney: William Applegate Gullick, Government Printer.—1908

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